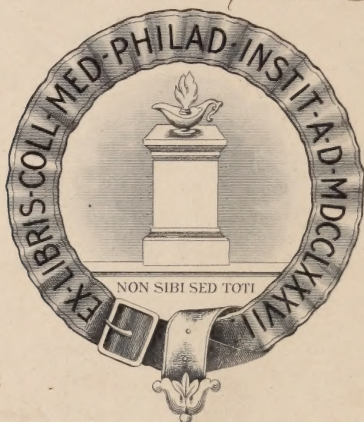


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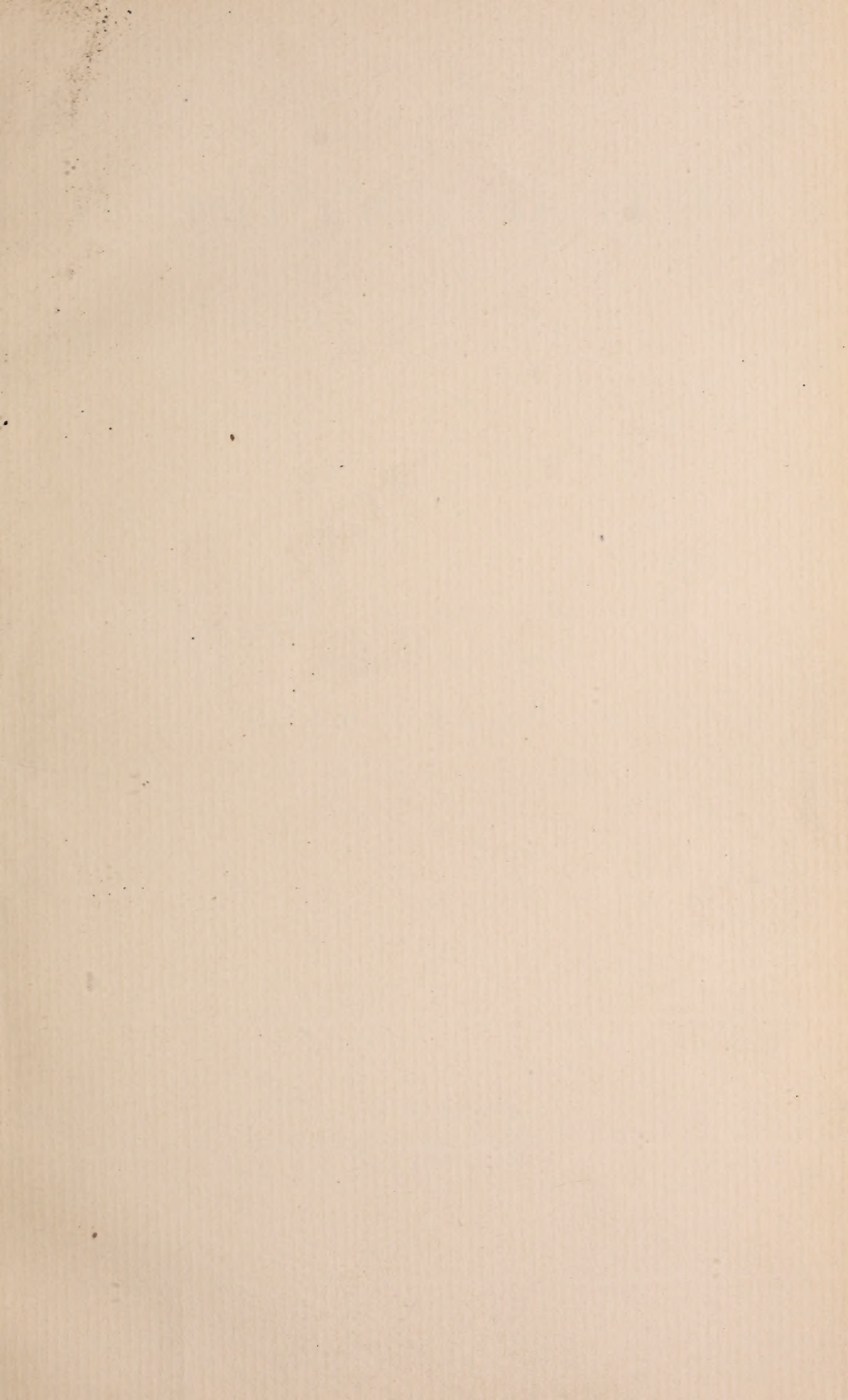



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EDITED BY

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EDITORIAL.

THE SUPERMAN IN MEDICINE.

The curious insistence of religious healing societies to usurp that which does not rightly belong to them, is so disturbing a factor in the general practitioner's life, that the even tenor which was wont to characterize his unassuming actions as servant to the public, can no longer be reckoned as his best asset. That destruction of the mental placidity, which was his by much logical thought, should at present obtain, is not due altogether to the advertised triumphs of the mental healers, but to a conflict in his own mind involving the awakening of his blunted susceptibilities to opportunities which were within his reach but which were overlooked in his enthusiasm to deal exclusively with disease. What these opportunities are the Emmanuel Church has blatantly arrogated to itself; and by its insidious methods it has not been unsuccessful in operating "clinics" in various cities, by dominating through personal influence quite a number of partially trained minds. And here it would be well to pause and ask the general practitioner if the personal note in his manner of the care of the sick is not too completely in abeyance, and how far, if he really attempts it, he allows full rein to his individuality to override the vacuous manifestations of functional brain disorders. Or does his routine work weaken his individuality to so great a degree that its poor remnants are as naught against a menace that cannot but be apparent to him, but which he fails to vanquish because of a lack of will power in compelling his patients into saner assents. Surely, for the distraught to find a sanctuary, it is necessary to pit against them a stronger personality than the sort of medical man who is so entirely engrossed with the signs and symptoms of disease that all else is considered by him of minor importance!

The idea of detaching medicine from the seething currents of modern thought, is altogether too medieval to be encouraged and abetted in the expectation of its survival at this late day. We take it there still must

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be a goodly number in the rank and file of the medical profession who are unwilling to concede that any pressure from without should in any way affect the routine of their work; but though precedents are occasionally of some excellence to hark back to, and are easy quotation in substantiation of a stubborn front, the hardship we would impose on all those who have stiffened themselves against what are foolishly thought to be unjustifiable incursions, is the one of greater severance with the past and a more intimate relation to the outstanding marks of modernity. To have labored in behalf of mankind only to realize after years that though the practical results were good, the man in the street has remained unaffected by "the great benefactors of mankind, deliverers," in so far as his judgment of doctors in general is the commonplace of criticism the world has harbored too long, is a matter that should not be construed into a calumny because of seeming ignorance and hostility. It merely indicates that both critic and criticized are sufferers from a want of judgment: the former on account of a prejudice that was provoked by the inattention of his own doctor to his mental needs when he lay a sufferer in the vise of some serious disease; the latter on account of an oversight that his personality is a very important factor in controlling the vagaries of the functional mental disturbances peculiar to those whose equilibrium is destroyed through pain.

Individuality is a force to-day in nearly every walk of life except in medicine. There, knowledge counts for much, and rightly, but knowledge is not, nor can it ever be, the agent which alone is capable of combating certain symptoms which are the concomitants of nearly all the graver symptoms so beloved of all painstaking practitioners. What the importance of the so-called lesser symptoms is, need not be contended here: but that they have eluded the supposedly firm grasp of the doctor of to-day is made manifest to all of us by the success of the multiplicity of religious healing societies. And they have eluded him because of his unwillingness to reckon them in the same category with all those salient points of disease inculcated into him in his college curriculum, or by the various text-books that have broadened his mind when he was a full-fledged doctor. Whether or not a vagary that becomes a fixed idea should be met with sympathy or derision, depends on the mental bias of the attending doctor, and has so many ramifications as an argumentative proposition that only a very brave man would attempt to define his reasons for assuming a staunch attitude in the matter. But even his strongest contention for his attitude towards peculiar mental manifestations, will not make the kindest critic think better of him, unless the convincing fact obtains that by sheer force of his individuality there was a complete cessation of all untoward mental symptoms.

That the times are ripe for the Superman in medicine, no student of the present socio-medical conditions can deny. He is as necessary in the limited republic of medicine as in literature, politics and science. For with his deep knowledge and his exasperating egotistical estimate of himself he will not fail to make amends for the past feeblenesses of our many general practitioners who have not his high lights. His very egotism, on account of its outcome from an unusual intellectuality, will be fraught with enough compelling force to down all those unseemly mental manifestations which our easy-going methods have allowed, not only to spring into existence but grow with startling luxuriance. Not till the Superman arrives in medicine will there be any abatement in the success of the practicers of the pseudo sciences; for no matter whether we prate until the crack of doom about the stupidities inherent in the many advertised methods, their life will not be imperilled a whit, for the very loudness of our talk but proclaims our deplorable weakness. But with the advent of the Superman, confusion will enter their camps; for he will at once show, through his personal influence over his patients, that the power of doing good does not really belong to religion when the matter is a purely medical one; and that the science of medicine, though remiss in appreciating the import of certain mental disorders in its zeal to alleviate physical suffering, can do the right thing by all patients when the strength of an individuality marshals its forces alongside those already recognized forces which derive their value from a deep and wide knowledge of the medical sciences.

THE MEDICAL SCHOOL AND ITS ENTRANCE REQUIREMENTS.

The matter of the proper education of the modern medical student has been threshed of late by so many men in a position to know just what befits the aspirant after medical honors, that for any one who does not carry the weight of authority as a recognized educator to call a pause to the wave of enthusiasm, must be thought an attitude detrimental to progress. That we are decidedly in favor of the four year course which to-day obtains in all the better medical schools, goes without saying; but an altogether different matter is the insistence of our educators on the absolute necessity of all medical students to hold a bachelor's degree before entering the medical school. To make anything in the educational line applicable to all, many, if not all, the facets composing a many-sided question should be envisaged; and though the results of so doing are on the side of education, we must not overlook the fact that the best education a medical student can receive is not so

closely connected with a previous university education as our educators would have us to believe. In other words, is not the mere college man who enters a medical school of excellent standing, quite as well equipped for an understanding and appreciation of his new studies as the man who holds a bachelor's degree? Of course we do not for a moment mean that he has had the educational advantages of his so-called superior brother, but what we do mean is that his college education suffices for his medical studies. For to our narrow horizon, founded on observations of the best medical results after the enjoyment of either preliminary educational privilege, the doctor who would incur the displeasure of our advanced educators on account of the lack of a bachelor's degree, holds his own in the medical world as far as the desired term of "educated doctor" goes, with him whose circumstances were of the affluent sort to allow of the higher education as promulgated by various university presidents.

Preliminary education of the sort that widens the mind to an appreciation of the needs of a knowledge of some of the dead and living languages, of literature and history, should be exacted from every student about to enter upon his medical studies; but though we do not wish to underestimate the value of these advantages, what is really of more importance is the medical school he chooses, and the clinical advantages it offers. We are fully aware that a medical school that can claim a close relationship with a university is more advantageously placed in a worldly sense than one lacking the honor; but can it be contended in all fairness that its roster of professors and its clinical assets are superior to the medical school without such an alliance? The university, it is true, sets its seal upon the medical school, but are the students who leave it better equipped in a medical sense than the students who graduate from a school which demands a four year course of study, but which has not had the kindly directing hand of a university?

If we are to raise the standard of medical education in this country, let us talk less of the importance of an alliance of medical schools with universities and more about extending the years of medical study from four years, which now are thought to be sufficient, to six years. For the prime importance that makes for equipment of a full-fledged student of the medical sciences is not the four years spent at a university, but the mastery of purely medical studies gained in a medical school. And surely in these modern days when the number of studies is on the increase, six years would not be too long a time to devote to the preparation of what might be called the most serious calling in the world. Again, by omitting the bachelor's degree, and allowing the medical student to enter on a six year medical course, after receiving his college degree at

eighteen, his age at graduation would be twenty-four instead of twenty-six, as is always the age when a bachelor's degree is previously demanded; and his advantages would not only be a gain of two years—important years when the necessity of making a living is concerned—but the greater gain of having a better knowledge of the medical sciences than all the bachelors' degrees throughout the world could give him.

The higher education of the medical student is a different matter from that of the purely literary student. With the latter his education is completed when he receives his bachelor's degree, whereas with the former there are before him new and intricate vistas to engage his serious thought. An illiterate mind cannot grasp their many importances; only one that is educationally prepared has the required aptitude. But preparedness need not be insistent on a university degree; a college diploma, despite the dicta of our educators, can and should suffice. In fact, the much-vaunted preliminary university education, while its benefits, as a distinction to be used to impress those doctors who are less fortunate, cannot be overestimated, does not hold so great an intrinsic worth for the future doctor as the educators would desire us to believe; for though it may broaden somewhat the mind of the beneficiary, it has as yet failed to add two assets to what is absolutely necessary in the doctor's educational ledger—a reading, if not a writing, knowledge of French and German, and enough of the right appreciation of classical English to prepare a medical paper so that distinction is one of its merits. English universities can lay claim to the making of earnest students of the mother tongue, with results, when it comes to putting their thoughts on paper, that are gratifying; but even with English medical students there is a deplorable deficiency in the aforementioned languages,—a deficiency that has recently called forth a protest from Professor Osler. The importance of a knowledge of these languages cannot be questioned by any one who knows and appreciates what French and German medical men are doing to-day in the matter of research work, not to mention other departments of medical science; and since these very lacunæ occur in the preliminary university education which the educators amongst us deem absolutely necessary for a correct appreciation of future medical studies,—instances observed by us cannot but constitute criteria of these glaring defects,—would it be right to withhold a harsh criticism of those who are now advocating a university education for the medical student of to-day?

A SURGEON'S PLEA IN BEHALF OF THE PUBLIC.

In these latter days when many criticisms are passed on the autocratic attitude of the surgeon toward his patients, not only by the patients themselves but by that class of doctors known as internists, the incisive remarks of Dr. John C. Munro in his paper, "The Surgical Rights of the Public," read before the Canadian Medical Association, have enough of that best of all qualities, opportuneness, to make even the unthinking part of the medical profession aware of the fact that surgery with all its shortcomings is master in the medical field. This opinion, which we express without any hesitancy, needs no bolstering by indiscriminate praise from fanatics in this special province, for its daily performances are of so high a character that its supremacy cannot be questioned. And with the thought in mind that the behests of surgical interferences are not to be relegated to secondary considerations, Dr. Munro advocates, what is clearly written across the history of modern medicine—to-wit, the public is entitled to the best that surgery can offer, and for internists to carry their teachings into the province of surgery, in the hope that in that way the public will become cognizant of the importance of internal treatment in lieu of operative procedures, is an intrusion that is a wrong to the unsuspecting public, inasmuch as in many cases the delay instituted by the stubborn attitude of the internist to operations, is often the cause of irreparable damage to the patient.

Now the question which assails the thinking mind upon reading Dr. Munro's expression of a somewhat deplorable situation in the practice of medicine, is not whether he is entirely right or entirely wrong in his contentions, but whether the public is as much the victim of the misdirected enthusiasm of the internists as he makes it out to be. Perhaps in his enthusiasm for his chosen specialty, Dr. Munro sees only the low lights of a treatment that has for its advocates quite a number of seemingly honest men. And again, since surgery stands for much in the advancement of medicine, it is possible that the immediate relief granted a patient through surgical interference, may have blinded him to the slower beneficial processes arising from internal treatment. In other words, does the internist really persist in his treatment of a case even after he realizes that surgical help is the only solution, and is his judgment so warped that a case which is purely surgical from the start and should be met with the knife at once, is made the object of experimentation simply to gratify a hobby that has all the bad points of the exploded school of empiricism?

In writing on a subject that is not merely a wrangling of the common sort, such as doctors, as well as others, indulge in, but one that involves the prolongation of the life of the patient, statistics are all important in

adjudging the offenders; but since these are lacking, we must fall back on the results of the achievements in the specialties under consideration, if we would stand the test of unbiased critics. That internal medicine is striving through many difficulties to recognition as an important entity in the medical household, is a fact that should not be overlooked. Not unlike all other ambitions that are slightly frowned on because of their youth and irritating exuberance, it makes much of its successes; in fact, heralds them forth with rather undignified fervor. What these successes are, in the limitations which the various other specialties in the medical profession would impose, we do not question; but what we do question is the right of its enthusiastic and somewhat unruly disciples to make inroads into a specialty, such as surgery, that has stood the test of the severest criticism, only to come out with flying colors. No matter what the charge against surgery by its scattered detractors, the fact remains that it has always held its skirts clear of the bedraggling that only too often accompanies experimentation in medicine. Its directness, its clarity of thought, its uninterrupted advances and, finally, its independence, have placed it on a higher plane than that of any other specialty in medicine for the reason, that these are qualities that make for confidence; and are not at all germane to the saying of Agathon, as related by Aristotle in his "Poetics:" "It is a part of probability that many improbable things will happen."

OPINION AND CRITICISM.

DICKENS' DOCTORS.

A subject that is of perennial interest to all medical men, who are not averse to having their defects mirrored in the mind of a great writer, is whether or no the writer has such stubborn preconceptions that a series of characterizations is evolved with small claim to truth. The charge of exaggeration has been brought against the writings of Charles Dickens so often that a repetition of the criticism would bear all the earmarks of triteness; and though it is well-nigh impossible to pass judgment on any of his characters without harking back to the comforting thought that his very exuberance prevented his describing men and women just as they are, in the case of the doctors in his novels we are not unwilling to admit that they are so free from exaggeration that even, though many years have elapsed since their creation, their salient points are excellent reminders of certain defective features in medical men whom we meet to-day. Dr. Henry Leffmann in his recently published book, "About Dickens," has an interesting chapter on Dickens' doctors; and while he recognizes the strength of the portraiture, greatly deplores the types the novelist selected. That a novelist of Dickens' surpassing genius for keen observation should have limited himself to medical men of the blandly uninteresting sort, such as Doctor Desprez in Stevenson's "The Treasure of Franchard," to mention only one instance in modern literature, is really asking too much; and despite our efforts to overlook the shortcomings of our medical fellowmen, especially when the company in which we happen to be is "mixed,"—professional courtesy, alas! is often synonymous with insincerity,—the revelation is often borne in on us that humor could vanquish many a foible, were it allowed to exercise its beneficent offices, in reminding the medical types which are always with us, that their dignity is not real dignity and their scientific pose not so adamant that it is proof against attacks.

What medical reader of Dickens has not met the counterparts of the submissive and unobtrusive and grateful-for-small-fees, Mr. Chillip, who confined Mrs. David Copperfield, and "was the meekest of his sex, the mildest of little men;" of Mr. John Jobling, M. R. C. S., Medical Director of the Anglo-Bengalee Disinterested Loan and Life Assurance Company, who "could shake his head, rub his hands, or warm himself before a fire, better than any man alive; and had a peculiar way of smacking his lips and saying, 'Ah!' at intervals while patients detailed their symptoms, which inspired great confidence;" or of that well drawn

pre-Lister doctor, who to some extent survives to-day, Haggage, accoucheur to Mrs. Dorrit in the Marshalsea Prison and "amazingly shabby, in a torn and darned rough-weather sea-jacket, out at elbows and eminently short of buttons (he had been in his time the experienced surgeon carried by a passenger ship), the dirtiest white trousers conceivable by mortal man, carpet slippers, and no visible linen?" Humor has done in these instances what all the serious writing in our newest novels, in which doctors are conscientiously depicted or aggressively attacked, has failed to effect; for by its magic wand there stand before us types which, though not of great loveliness, are much more life-like than any serious stultification could be, and are, moreover, unforgettable lessons that make even the most modern of modern doctors aware that imperfections somehow fall to him as to other mortals.

We often see in medical journals rapturous comment when a novelist strikes the right key in describing the sacrificing vocation of the medical practitioner,—his kindness, his sympathy; when scientific expressions are correctly used and vivisection is not too severely scored. Our medical hearts warm to the novelist who champions vaccination and makes no blunders as to the aseptic preparations prior to an operation. Such medical knowledge predisposes the kindly critic and the kindly reader to enthusiasm, irrespective of the undisguised stiltedness of the speech of the medical marionettes. In Dickens' novels, on the other hand, there is a delightful absence of medical talk that flirts with science; but to bridge this defect we have a number of portraits of medical men, so superior to the faulty characterizations by modern writers, that much can be forgiven one whose humor, always on the alert for human imperfections, is especially boisterous when doctors swim within his ken.

LITERARY NOTES.

A work that has enough of appositeness to fit in neatly with the tendency in the medical thought of to-day, is Dr. W. Bieganski's "*Medizinische Logik*," recently issued by the well-known Wuerzburg publisher, Curt Kabitzsch. The whole gamut of medical logic is so thoroughly gone over that the intelligent reader, who is avid of the subject, will have no difficulty in acquiring sufficient thought to stimulate him to the very best appreciation of its importance. Medical logic in the sense of a science is really a matter of recent times—of the last half of the nineteenth century—though there were indications of its worth as far back as Greek medicine. In the so-called "*Hippocratic Collection*," which has been attributed by the latest historical criticism to various writers, may be found the discourses "*On Ancient Medicine*," "*Of Art*," and "*Precepts*," bearing on the subject of the science of medicine and

methodology. In the later development of Greek medicine, methodological questions assume an important part in connection with the attitude of the Empirics. But in all these writings methodology was not scientifically considered nor was it made a special subject; therefore, for the present generation of doctors, it has only a historical significance. Nevertheless, it should not be forgotten that the mere mention of the subject indicates that even in ancient times doctors recognized the necessity of giving thought to the why and wherefore of their knowledge, and the fruits of their thought. Later on the importance of the realization of this necessity was more and more relegated to matters of secondary worth, and it did not make its reappearance as a something that should be scientifically considered in a university's curriculum until about two hundred years ago. At that time was evolved the subject of self-discipline, the so-called medical propædæutic which had no definite lines of demarcation as a distinct science, but was made applicable in that extended province of medicine which included "all things and certain other things." Propædæutics, as taught in the universities at the beginning of the nineteenth century, included lectures on the history of medicine, on the encyclopedia of medical sciences, on methodology, deontology, and similar subjects. The study of the science of medical knowledge was discussed in propædæutic text-books in a fragmentary way and showed, neither the exigencies and the demands of scientific criticism nor the requisites of medical practice. Although the eighteenth century was rife with the teachings of propædæutics, only two writers of exceptional merit took up the matter of medical knowledge in a manner not attempted before. One of the books was by the Swiss, Johann Georg Zimmermann, who was the pupil of the great physiologist and polyhistor, Haller, and bore the title "Experiences in the Art of Medicine" (*Ueber die Erfahrung in der Arzneykunst*). This work appeared in 1763 and was, at the time of publication, widely read not only in Germany, but also in France and Italy, where it appeared in French and Italian translations. The author shows beyond a doubt that he is an adherent of the teaching of reasoned experience founded on experimental bases, and denounces, in no unmeasured terms, the false and superficial observations resulting from medical experiences at the bedside. This is the pivotal idea of a book which, however, contains no systematic exposition of the methodology of medical sciences. The other work, "Of the Degree of Certitude in Medicine" (*Du degré de certitude de la médecine*), is by Pierre Cabanis, physician and philosopher, trained in the School of the Encyclopedists, and especially well-known as a prominent figure in the French Revolution. The author differentiates between the certainty that is exact and unvarying and the certainty that is practical, and is founded on possibilities. Medicine in his opinion is a matter of the certainty founded on possibilities and resembles, moreover, the pursuit of agriculture, because the latter is also fraught with but little

surety. The works of Zimmermann and Cabanis are a defense of medicine and a reply to the oft-repeated allegations of the times—it would be well here to remember Molière's comedies—but though they are deserving of praise because of the stand the authors took in behalf of medicine, they are to-day only of historical value, since they do not contain a valid explanation of the processes leading to recovery, or any criticism of medical knowledge.

What sort of aid was given to the insane in the seventeenth century is graphically described by Dr. Dubos, in his Lille thesis, wherein is specially mentioned the Order of the Good Sons, who in 1615 established at Armentières, a refuge into which were received the alienated until the time of the French Revolution, when the property was confiscated. Though the Order ministered to the mentally sick with a solicitude worthy of the religious fervor which characterized all their benefactions, it would be folly to say that the treatment was the sort required in the respective cases. For the nature of the derangements was a closed book, and the idea of the possibility of a cure or the efficacy of certain drugs, was outside the limited comprehension of the Order. Charity toward others was the impelling cause which induced the members to shelter the mentally afflicted who wandered aimlessly along the public highways, exposed to injuries and privations. Yet, it was not only a charitable feeling that made of each member an enthusiastic worker, but the fixed idea, that only in saintly or religious abodes could there be effected the deposition, by the power of exorcism, of the demons held responsible for the mental disturbances. In France it was the custom to conduct the insane to churches, either in Castel-Sarrazin, a village in Upper Languedoc, or in Bonney, a village in the Vosges, for the purpose of driving the demons out of the demented; an act of exorcism that was not unwillingly undertaken by the officiating priests. At Besançon, the fête of Saint-Suaire (The Holy Shroud) was made memorable by the presence of a large number of insane who had been brought from afar to undergo a cure; for the positive belief was, that not even the most hardened demon was proof against the destruction dealt out by touching a relic that was unequalled for holiness. Saint Gilda, mentioned by Rabelais, officiated in Brittany, Saint Menoux in Bourbonnais, Saint Dizier in the department of Belfort. Finally the altar of Saint Nazaire, at Ablain, a village situated some distance from Arras, in the canton of Wimpy, attracted crowds from all the provinces. And even to-day the belief in the help of this sort, in those parts of France where sorcerers and sorceresses obtain, is not entirely a thing of the past, for Dr. Dubos recalls a scene which he witnessed, when quite young, where exorcism was resorted to in a Basque village on the Spanish frontier.

A matter of interest to medical men is the brochure "*La nouvelle méthode hyperémique de Bier dans les textes d'Hippocrate*," by Dr. Foustanos, of Syra, Greece, which was recently presented to the Académie de Médecine. As is known, Bier's method consists in producing a pas-

sive hyperemia in the diseased parts by means of a venous compression a little above the seat of disease. Dr. Foustanos shows that this method of treatment, in its applicability to atrophies, has been well described by Hippocrates in his treatise entitled "The Physician's Establishment, or The Surgery," in which he says, in paragraph 24, "in treating parts which are atrophied, we must comprehend a considerable part of the sound limb with the bandage, so that by the influx thereby produced, the wasted part may acquire a supply greater than its loss, and may be thus disposed to growth and restoration of its fleshy parts." The Hippocratic method was in vogue for many centuries; Galen describes it in detail in his works and recommends it highly to all practitioners. But despite Galen's praise, it fell into disrepute for reasons as yet unmentioned in the history of medicine, and it has remained for Bier's perspicacity to rescue it from its undeserved oblivion.

Dr. Lenoir, a major in the French colonial troops, gives some interesting details, in the *Annales d'hygiène et de médecine coloniales*, in regard to the poisonings of the incarcerated at New Caledonia by means of datura. This plant grew formerly in great abundance on the island, but stringent laws have been passed to effect the destruction of a means by which crimes were perpetrated. Now although the price of datura has soared very high on account of its scarcity, cases of poisoning are not infrequent. In this penal colony the passions, on account of their being continually hampered and cramped, are furious when opportunities arise where their full play can be effected without fear of discovery. Of all the passions, that of cupidity is most highly developed, since the one idea of all the prisoners is to possess that which can better their condition and put them above their companions. Their methods for achieving this end are not unworthy of the duplicity and craft of the Borgias. The unfortunate one, who has been unduly flattered, is led, so to speak, by silken cords into a merry company of his supposedly good friends, and offered, among other things, a cup of very good coffee. While the conversation is at its height his attention is distracted for some moments, during which critical period a sufficient dose of datura is surreptitiously placed in his cup. The guest of honor drinks the coffee and even though he may remark that there are considerable grounds at the bottom of the cup, his friends readily assure him that even good coffee has grounds. After a short space of time, he experiences considerable vertigo, his speech becomes incoherent, his steps uncertain. One idea possesses him: to find at once the place where is hidden his treasure. Staggering and tottering, he manages to reach the goal and, when arrived, at once scratches up the earth with his nails. His friends sympathetically interfere, and directly in full possession of the treasure, divide it with great fairness. After the looting, no further attention is paid to the victim; and when he recovers, a very fortunate mental condition, so far as the conspirators are concerned, obtains, for there is no recollection on his part of what has occurred.

ORIGINAL ARTICLES.

THE CAUSATION AND TREATMENT OF INFANTILE CONVULSIONS.

By E. W. SAUNDERS, M. D., of St. Louis.

As we are dealing not with a morbid entity, but with a symptom complex, I will ask permission to ignore the usual classification of factors into predisposing and exciting, etiologic and pathogenic, and to adopt a simple didactic and clinic nomenclature.

I.

CENTRAL CAUSES.

1. Gross lesions of the brain or meninges, morbid or mechanical, congenital or acquired.
2. Concussion—*commotio cerebri*.
3. Sudden changes of pressure in the blood or cerebro-spinal fluid.

II.

CENTRIPETAL CAUSES.

1. Reflex.
2. Psychomotor.

III.

DYSTROPHIES AND INANITION.

1. Rickets—Tetany.
2. Acute and chronic cerebral inanition.

IV.

HEREDITARY, OR CONGENITAL (INORGANIC) CAUSES.

1. Similar or dissimilar heredity.
2. Prematurity, congenital debility.

V.

INTOXICATION.

The whole list of drugs and poisons, including food-poisons, credited with spasmogenic power, (CO_2 and acetone excepted). Some of them, such as alcohol, may be imbibed with the breast milk.

VI.

INTOXINATION.

The specific toxins of acute infectious diseases, including those of organisms, like the colon bacillus, which sometimes become parasitic.

VII.

PYREXIA.

1. From toxins.
2. From reflex irritation.
3. From heat-stroke.

VIII.

AUTOINTOXICATION.

1. From gastrointestinal disturbance.
2. From hepatic insufficiency.
3. From disturbance of the internal secretions.
4. From renal insufficiency.
5. From pulmonary and cutaneous insufficiency.

IX.

MATERNAL AUTOINTOXICATION.

1. Puerperal eclampsia.
2. Violent emotion shortly before nursing.

X.

1. Asphyxia.
2. Whooping cough.
3. Thymic asthma.

XI.

SPASMOPHILIA.

XII.

ECLAMPSIA OF THE NEW-BORN (requires a separate consideration).

Before taking up the foregoing in detail, it would be well to consider the defenses of the organism against the malign influences which are operative in the subject under consideration. Disease is defined as "the reaction of cells to noxious influences." The body cells are guarded from the approach of the enemy by a quadruple line of defenses.

I. The digestive ferments, and the transforming power of the gastro intestinal mucosa, bathed in these secretions, supplemented by the phagocytic power of the leucocytes, which swarm in the mucosa during digestion.

II. The toxicolytic function of the liver.

III. The toxicolytic function of the ductless glands, the pituitary, the adrenal, the thyroparathyroid, and the thymus.

IV. The eliminative function of the kidneys, intestines, skin, lungs and salivary glands.

The digestive ferments have toxicolytic power in the order named: 1st, the pancreatic juice, 2nd, the saliva, 3rd, the gastric juice. This power, however, is not supreme, and in some instances, avails nothing, as in the case of *cobravenom*, which is a *toxalbumose*.

The cells of the mucosa habitually convert poisonous intermediary products of digestion into *pabulum* for the tissues. If they are destroyed by ulceration, or thrown off in great quantities as in choleraic diarrhoea, this line of defense is gone, and not only do all manner of toxic substances, peptones and toxins, enter the circulation, but also bacteria may freely penetrate the wall.

Von Behring has shown that permeability is normally characteristic of the intestinal mucosa for the first quarter of infant life. The integrity of the digestive functions is essential for the preservation of the normal "digestion leucocytosis," which is in evidence in the whole circulation, but pre-eminently in the intestinal wall. The role of the leucocytes in attacking invading cells, is well known, and they even segregate arsenic, for instance, in arsenical poisoning.

The liver, along with its other functions, combines that of rendering toxic agencies less noxious. It is estimated that it normally reduces the toxicity of the blood brought to it by one-third, and by how much more in disease, has not been determined.

Animal and vegetable alkaloids are peculiarly subject to its reducing action. Ammonia is there synthetized to harmless urea. A striking example of its reducing power is given by *guaiaacol*. Administered internally, it is not possible to obtain a striking antipyretic effect in fever, but fifteen or twenty drops absorbed by the skin, gives an immediate and powerful effect, notably in the pyrexia of tuberculosis, pneumonia and typhoid fever.

The ductless glands are now credited by all investigators with playing a leading part, not only in the normal metabolism of the body, but in its defense in time of war. Even the little-understood thymus is believed to be charged with the duty of reducing catabolic poisons in the blood during foetal life. Up to the present time the deplorable fact remains that we do not sufficiently understand their reciprocal functional relations and their combined effect upon the organism, and the changes of function produced by disease, much less how to meet these changes. Sajous, for instance, claims (on what evidence it does not appear) that at the moment of a convulsive seizure there is an enormous hypersecretion, whereas there was a hyposecretion precedent to the attack.

The emunctories of the body constitute the line of defense which we best understand and over which we have the most control. Of this we will speak more fully under the head of treatment.

In considering the central causes of convulsions we should not only think of severe traumatism, hemorrhage, tumor, thrombosis, abscess, meningitis, obvious hydrocephalus, but also of such conditions as concussion, congestion, anaemia, initial hydrocephalus, or transitory change in the amount of cerebrospinal fluid.

A baby two years of age fell from the window sill upon the crown of the head, and had a convulsion. She speedily returned to a normal condition and seemed to be none the worse for her experience. After a few weeks, convulsions returned, and she gradually developed a confirmed epilepsy.

Sudden congestion of the brain occurs in fever and in asphyxia, and no doubt contributes to the occurrence of eclampsia. I have observed in a case of apparent death due to post-diphtheritic heart failure, that on the return of the pulse, after artificial respiration, there would occur mild convulsive movements of the muscles of the face and extremities, due to the sudden return of the blood pressure. Immediately after lumbar puncture in a case of prolonged convulsive seizures, I noticed that the attacks became more severe and continuous. In the hydrocephalus of early infant life, every rise of pressure is marked by a series of convulsions, and a subsidence of fluid brings on abatement.

It is possible that some of the cases of convulsions in the beginning of rickets, not characterized by laryngospasm and other marks of tetany, may be due, to a minor degree of hydrocephalus.

Under the head of centripetal causes come the various reflexes that have been brought forward as capable of producing eclampsia: phimosis, dentition, intestinal parasites, foreign bodies, indigestible food, or excessive amounts of food, otitis, calculus, strangulation of intestine, undescended testicle, are all credited with spasmogenic power, on good authority.

It is surprising to see the amount of acrimony injected into the discussion of dentition as a pathogenic agent, especially by the Vienna school. The plea that it is physiological applies with equal force to adherent prepuce. In a case seen with Dr. W. L. Johnson, convulsions occurred for the first time accompanied by high fever and double otitis. In spite of all treatment, they persisted, after subsidence of fever and healing of the ears, and only ceased after circumcision. He reports two other cases in which there has not been a return since the operation.

Rachford truly states that a nagging reflex may cause high fever, and even degenerative changes in the central nervous system. Jesse Myer has made some very enlightening discoveries in relation to the occurrence of "intestinal sand" after the ingestion of bananas. He finds that it is due to the gum resin and tannin of the tubules. He has requested me to ascertain, if possible, whether the occurrence of convulsions in children after eating bananas may be due to the irritation of this sand. It is possible, although the child has usually gorged itself with the fruit, without a semblance of mastication.

Under the head of centripetal causes comes also the small group due to sudden fright or rage. I have seen a single convulsion occur from the use of the thermometer (no anal fissure). Sometimes a child of uncontrollable temper loses its breath, and has a slight, or severe general convulsion. This recurs so often that it becomes a habit. I would suggest the term "Orgilospasm" for this well defined group of cases. In the few which I have seen there was no sign of tetany.

Heredity is a well known factor in the etiology of eclampsia. Every member of a large family has been known to be subject to it. Sometimes the neuropathic diathesis in the ancestors is dissimilar. Drunkenness is peculiarly prone to be transmitted into convulsions, resulting in epilepsy.

It would be interesting to know whether prematurity contributes, to any appreciable extent, to the occurrence of eclampsia. I have in mind a very neurotic mother who lost her first two children in difficult labor, and was delivered of the next two at eight months. They both died of convulsions under one year of age, the one in the course of whooping cough, and the other in the initial fever of measles.

Tetany and rickets seem to be almost synonymous in the treatment of this subject. The general weakness and smallness of the cartilages may affect the structure of the larynx, and be in part responsible for the laryngospasm. If the convulsion is inaugurated with a crowing sound, we may at once divine the nature of the case. It is well to remember that the list of drugs capable of producing convulsions in infants is a long one. Balsam of Peru applied to the nipple has produced them in the nursing. Likewise diachylon ointment, and acetanilid applied to the umbilicus. Phenacetine and antipyrin have caused severe cutaneous eruption with eclampsia. Carbonic acid gas and acetone are universally credited with this power, but on no adequate evidence. Acetone is feebly anæsthetic and not convulsivant. CO_2 is nature's anæsthetic. Physiology teaches that CO_2 poisoning, slowly induced, ends in coma and not in convulsions. If, however, the supply of oxygen be rapidly cut off, convulsions occur. The significance of this fact will be brought out later. The Germans are particularly insistent that alcohol should not be allowed to the nursing woman. I would remark in passing that Bunge attributes the failure of modern women to nurse their infants largely to this cause. Intoxination is a convenient word coined by Combé, the meaning of which is apparent. At first sight it might seem useless to distinguish between this and pyrexia as causative agents. But I wish here to make a point. Just as it is unscientific to credit CO_2 and acetone with spasmogenic power, when all the evidence is to the contrary, so I hold that no toxine should be listed as a cause of convulsions, until it is proved that it, and nothing else, is the guilty party. The toxine of tetanus is undoubtedly spasmogenic, but the unknown toxine of measles would seem to be soporific. That the sudden onset of measles is sometimes accompanied by convulsions, is capable of quite another interpretation.

Of all the factors entering into the causation of eclampsia, initial pyrexia seems to be the most prolific and the most dangerous. This is, no doubt, largely due to the fact that the infections which give rise to fever with convulsions, are more or less virulent, but pyrexia due to heat stroke with no exogenous infection is even more fatal. However, one fact strikes us as very singular in this connection, namely, that the convulsions in the vast majority of cases are initial only. If the child comes out victorious in the contest, after a day or two, there is no tendency to return, even though the high temperature may continue for a long time. A recurrence late in the course of the infection almost invariably means death, due to organic changes in the kidneys and other organs.

If then the specific toxins, most of them, cannot be credited with direct spasmogenic power, and if fever has not that power throughout the whole course of the infection, it behooves us to search for some other link in the chain of causes. We find it in the wide domain of autointoxication.

In advanced organic disease of the kidney, we see the clearest type of convulsions due to retention-toxicosis. Likewise in the onset of fever we have all the conditions requisite to autotoxemia—dry skin, dry mucous membranes, suppression of oral and gastrointestinal secretions, renal insufficiency, hepatic insufficiency, and most probably disturbance of the function of the ductless glands. The urine first voided may be colorless and of very low specific gravity, as low as 1002; the next contains urates in abundance. The specific gravity, registering the output of solids, furnishes a good index of the progress of the retention-toxicosis toward recovery.

These initial convulsions more often come on during sleep, and this reminds us of the fact that epilepsy in its first manifestations nearly always begins in the early hours of the morning. In sleep during the first stages of fever the temperature rises and the respiration becomes much more rapid.

Bouchard's theory was that the normal catabolic products of the tissues during sleep were spasmogenic, whilst those of the waking hours were soporific. Certain it is that sleep is apt to bring on convulsions, where the conditions are ripe for their occurrence.

Whilst the urine betrays an hepatic insufficiency, it is impossible in the present state of our knowledge, to know just what the ductless glands are doing in initial high fever. Shaw says (not referring, however, to febrile diseases) "it is possible that some cases of infantile convulsions are due to disturbances of the child's thyroparathyroidal apparatus or possibly, in the case of children at the breast, to disturbance of the same tissues in the mother."

Sajous believes that the internal secretions are the most important agents in oxidation. Howland and Richards have proved that the toxicity of indol is due to suboxidation.

Whilst positive proof is yet lacking, it would seem that the presumptive evidence is in favor of supposing an autotoxemia, due both to faulty metabolism and to retention-toxicosis, to be the immediate cause of the initial convulsions of acute febrile infections.

Primary gastrointestinal derangements are a prolific source of eclampsia. There are so many possible causes operative here, that we cannot refer all cases to any one cause. One may be purely reflex, as was that of a baby who had one convulsion, then passed a piece of cotton string, and was perfectly well. Another may be due to failure of primary digestion. Such was the case of a child who became eclamptic in the second year and had convulsions more and more frequently until it was evident that he was a confirmed epileptic. The most noted neurologists had abandoned the case, and the mother sought the advice of some one who prescribed taka-diasase. The seizures, which had been numerous every day, ceased for several years. However, the boy had already become imbecile and the epilepsy returned.

Rachford mentions cases of petit mal due to intestinal autointoxication. We should carefully search for digestive idiosyncrasies.

In acute gastrointestinal infection with high temperature, we have a combination similar to that which may obtain in any acute infection. If a child be overtaken by scarlet fever, for instance, with an overloaded intestinal tract, his chances of having convulsions are vastly greater.

Convulsions of the new-born, due to a transmitted toxicosis from an eclamptic mother, furnish another interesting example of the power of autotoxemia. The milk of an enraged mother has produced fatal convulsions. Whether we have to do here simply with perverted internal secretions, or with these and imperfectly reduced catabolic poisons, perhaps as a consequence, or with a toxalbumin, remains to be discovered.

Asphyxia, like cerebral hæmorrhage, is both a cause and an effect of convulsions. The laryngospasm of tetany and of whooping cough is frequently responsible for an eclamptic seizure. When this has once taken place it is very apt to recur at frequent intervals.

An enlarged thymus is sometimes responsible for most unexpected and primarily fatal convulsions, as reported by Holt, Baginsky, Kerley and others.

The convulsions of whooping cough present a mysterious mortality. There are two modes of onset, the one clearly cerebral from the first; the other asphyxial. The first group presents the following symptoms: stupor, diminished intensity of the paroxysms, slow, shallow and irregular breathing, slight fever. The case always goes on to a fatal termination; hydrocephalus may develop, or there may be a simple meningitis. In the second class of cases intubation should be done, although the results are often disappointing.

The term spasmophilia is reserved for the neurologists, and under this heading we would place all cases which we fail to locate elsewhere. A "physiologic spasmophilia" explains nothing for the clinician and has

only an academic interest. A "pathologic spasmodophilia" should enable us to place the case under its appropriate head.

Eclampsia of the new-born is said by some writers to be rare, and by others, to differ so much in its manifestations as not to be recognized. Rachford says that the undeveloped state of the pyramidal tracts accounts for the infrequency, but this may also account for the feebleness of the seizures. As Hochsinger says, they are more sustained and tetanic in character.

TREATMENT. I must confess that I am profoundly dissatisfied with the results of the routine emergency treatment of infantile eclampsia. The hot bath I discarded long ago, and I am not at all sure that chloroform is an unmixed blessing. In reference to the first, authorities are divided, whilst the second is acknowledged to be without effect in many cases. Holt has found oxygen inhalation successful where all else had failed. In primary laryngospastic eclampsia all treatment by inhalation is useless for the time being and in all severe cases the function of respiration is seriously compromised.

Death by asphyxia is the most imminent danger, and as we have learned from physiology, the more rapidly and completely oxygen is withdrawn, the more tetanized the system becomes. It is to be hoped that Holt's suggestion may lead to the trial of oxygen as a routine treatment in the place of chloroform.

Prolonged suboxidation may be an underlying fault in many cases—in whooping cough, for instance, it may account for the peculiar persistence and fatality even after intubation.

Morphine as an antispasmodic is certainly more effective than chloroform, and as Holt says, only those object to its use who have never tried it.

To the hot bath there are several objections. In the first place, a large number of cases of emergency convulsions occur with fever. Hyperpyrexia is most to be dreaded. I know of two cases dying in the bath; one with a temperature of 109° and another of 111° . Heat to the spinal column and back of the head is a motor excitant, never a sedative. It is not possible to put a child in convulsions into the bath except in such a way as to immerse the spine. This position is most disadvantageous for dealing with the asphyxia. The abundant mucous secretion and often vomited matter, are retained over the larynx and can only be gotten rid of by placing the child with the face down.

The cool pack has none of these objections. In non-febrile cases, the pack should be warm.

In the treatment of cases due to rickets the phosphates with appropriate diet and hygiene certainly do good. Phosphorus in oil I have never tried, believing with Trousseau that "it is a poison and no medicine." Holt has not been persuaded of its utility, after a fair trial. Bromides and chloral are safe and useful as antispasmodics. Veratrum viride is especially indicated in acute infections; it has the double ad-

vantage of being a spinal sedative in addition to its utility in febrile conditions.

In conclusion I would urge that we go in search of the precise and immediate causative agent or agents responsible for the production of the most common form of infantile eclampsia,—the Initial Pyrexia, and having found them, direct our therapeutics accordingly. The fine work done by Williams in fastening the guilt of hyperemesis gravidarum upon the liver for failure in its synthesis of ammonia, and that of Howland and Richards in relation to indol and its rôle in recurrent vomiting of children, may well encourage us and serve as guiding stars in our quest. Neurin has been thought by Donath to be the autogenetic poison responsible for epilepsy. Suboxidation is certainly an obvious condition present in a large number of cases.

"AUTOMOBILE FRACTURES."

By SIDNEY LANGE, M. D., of Cincinnati, Ohio.
Radiographer to the Cincinnati Hospital.

The "automobile" fracture is a fracture of the lower outer tip of the radius (the radial stylos) produced by the recoil (so-called "back-kick") of an automobile crank. The etiologic, anatomic and clinical features of this fracture are so strikingly characteristic as to justify a separate classification and terminology for it.

The four following cases, which were referred to me for x-ray examination, may be regarded as typical:

Case 1.—Rev. P. M., while cranking his automobile, was struck sharply upon the palm of the right hand by the recoiling crank handle. There was considerable pain to the outer side of the wrist following the injury but little disturbance of function and no swelling or discoloration. Therefore the arm was neither splinted nor bandaged. The fact, however, that certain movements of the wrist were painful, caused the patient to seek medical attention several days later.

Upon physical examination there was neither swelling, discoloration, deformity or crepitus to be obtained. Gentle limited movements of the wrist could be made, but forced movements caused pain to the outer side of the wrist. There was a distinct point of tenderness over the outer side of the radius, about one-half inch above the radial stylos.

An x-ray examination (antero-posterior view) showed a fracture of the lower outer corner of the radius, the line of fracture running obliquely from one-half inch above the radial stylos to the articular (carpal) surface of the radius, releasing a triangular fragment, which, however, remained in perfect apposition with the rest of the bone. Upon taking a lateral view, it was noted that there was absolutely no forward or backward displacement of this fragment; indeed it was difficult upon this view to detect the presence of the break. The discovery of this fracture was much of a surprise to both physician and patient.

Case 2.—Mr. C. V. B. While the patient was cranking his automobile, the "back-kick" of the cylinder suddenly jerked the crank out of his hand giving his wrist, according to the patient's statement, a severe twist, after which he was conscious of considerable pain to the outer side of the wrist, which increased upon moving same.

Physical examination showed little swelling and no redness or discoloration. Crepitus could not be obtained. All movements of the wrist except the most limited were painful, the pain being referred to the outer side of the wrist, while one-half inch above the radial stylos was a point of tenderness. It was this point of tenderness that suggested the advisability of an x-ray examination.

The skiagram revealed almost the identical conditions as outlined in Case 1. There was a line of fracture through the right radial stylus separating a triangular piece of bone from the lower end of the radius, but the apposition was so perfect that the line of fracture was in places, indistinct, and it was only by the closest scrutiny of the x-ray plate, and comparison with the uninjured wrist, that the presence of the fracture was definitely determined. A lateral view showed no forward or backward displacement.

Case 3.—Dr. C. R. H. While cranking his automobile was struck upon the right palm by the recoiling crank-handle. The wrist became swollen,

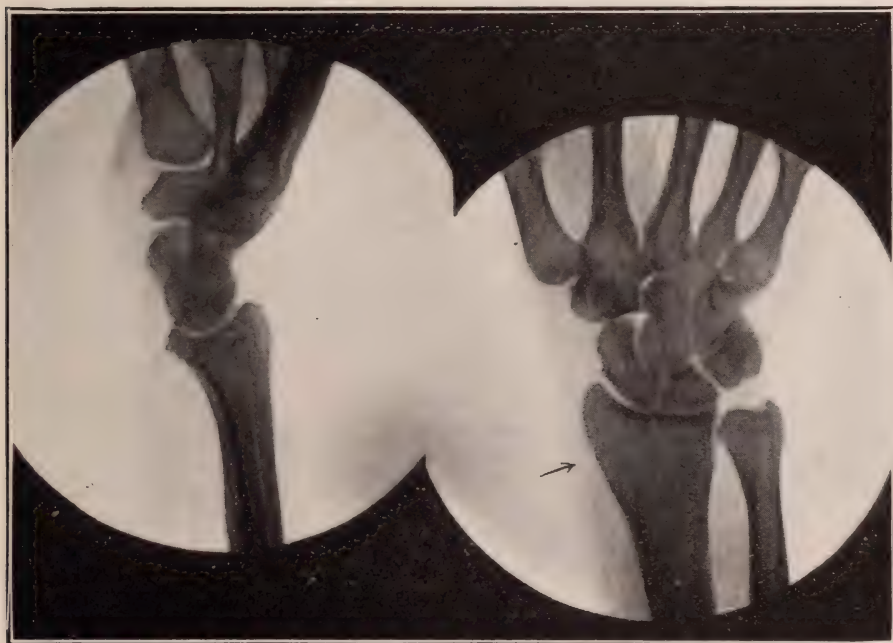


FIG. 1.

Lateral and Antero-Posterior Views of the Automobile Fracture.

all movements painful, with point of tenderness over the outer side of the radius, about one-half inch above the stylus. There was practically no deformity.

The skiagram showed a fracture of the radial stylus similar to Cases 1 and 2, with the exception that the broken fragment was of oblong shape rather than triangular. A lateral view showed practically no backward displacement.

Case 4.—Mr. H. D. B. This case was practically identical with Case 2 in etiology and x-ray findings.

There are certain features connected with the above cited so-called "automobile fractures," that distinguish them from the familiar Colles' fracture and put them in a class by themselves.

The automobile fracture is produced by indirect trauma to the lower end of the forearm, and because of the position assumed in cranking, the trauma is always expended upon the outer side of the arm, namely upon the radius. The right arm is always involved, unless the patient be left handed.

There is practically no separation of fragments on this type of fracture and as a result there is practically no deformity. This close apposition of fragments, together with the fact that crepitus is very difficult or impossible to elicit, makes it more than probable that the automobile fracture is a subperiosteal one. When we consider the nature of the force producing this fracture it is readily conceivable that the resulting crack might very well be subperiosteal.

There is but one clinical sign of this fracture, namely point tenderness above the radial styloid. The swelling is slight and discoloration is

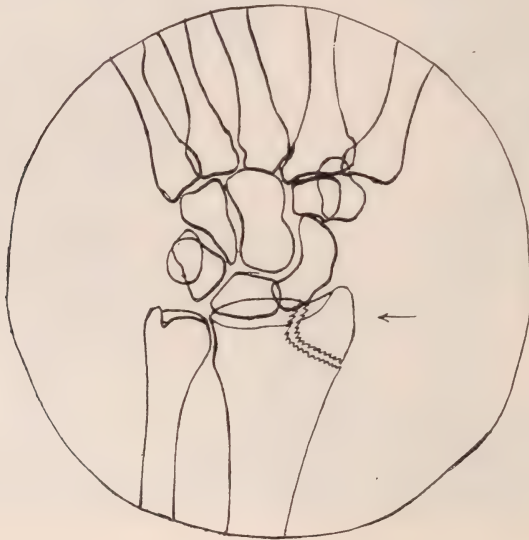


FIG. 2.

Outline sketch made from Fig. 1.

absent. There is no deformity, and crepitus is often impossible to obtain, while the disturbance to the functions of the wrist may be surprisingly slight.

Comparing the automobile fracture with Colles' fracture, we find the following points of difference: Colles' fracture usually follows a fall upon the extended hand; it is not subperiosteal; it is accompanied by much deformity and crepitus can (except in the impacted varieties) be easily obtained, while loss of function of the wrist is usually complete. Furthermore, in Colles' fracture the x-ray usually shows the line of break to be more or less transverse across the lower end of the radius, with *backward displacement* of the lower fragment, and very frequently a concomitant tearing off of the ulnar styloid.

By exercising care in cranking, this accident may be avoided. The object of the cranking is to compress the gasoline in the cylinder preparatory to its ignition. The explosion should not occur until the piston has reached the end of the cylinder. When the engine starts in the right direction, that is in the direction in which the crank is being turned, the crank is automatically released and remains motionless. But if the explosion occurs too soon, before the piston passes the center of the cylinder, the engine reverses itself and the crank does not release itself but revolves with the engine, producing the "back-kick."

If the reversal occurs on the up stroke of the crank, the handle will be jerked out of the hand and do no harm, unless possibly it should strike the knuckles after making a complete revolution. But if the reversal occurs on the down stroke of the crank, that is, while the hand is making a downward pressure upon the handle, the force of the back-kick is expended upon the radial half of the palm resulting in the automobile fracture.

To avoid this accident the cranking should always be done upon the up-stroke. If the engine fails to start after the first up-stroke the handle should be *readjusted* for the next trial. To guard against premature explosions, the sparker should be retarded which prevents ignition from occurring until the piston has reached the end of the cylinder.

HOW LONG SHOULD THE WOMAN REMAIN IN BED AFTER
NORMAL LABOR?

By FRANK HINCHEY, M. D., of St. Louis.

With the exception of the heresies which have arisen in the ranks of the German obstetricians, since the publication of Küstner's¹ paper in 1899, there is probably no subject, in the entire history of medicine, concerning which there has been such constant unanimity of belief as relates to the prolonged rest in bed after labor. When we find, in a science which has undergone so much of radical and endless change, such a fixed belief or law, we naturally suppose any departure from its observance must be fraught with death or at least proper physical punishment. Indeed most of us strongly incline to this belief, and, upon hearing of a rash woman arising before the accepted time, concur in the opinion that she will eventually "suffer for it." But does she suffer a penalty? Do we not base our prediction on the histories of patients who have arisen thus early after a confinement attended by lacerations or infections? Viewing the subject through pathological glasses, we do not consider that there may be many others who have arisen just as early, and, after a perfectly normal confinement, have never had occasion to consult a physician. I am not referring to wives of savages, nor to women accustomed to working in the fields, nor to women who have long been markedly neurotic or neurasthenic, but to the women we meet in the average practice.

It is my custom to permit the women whom I deliver to remain in bed the usually allotted time, for, where professional opinion is so unanimous, I have assured myself that such opinion must be altered ere the laity can be expected to favor an innovation so radical. For like reason, until the experimental stage has been passed, we have not advised any such practice in the Maternity Hospital. But during the past few years I have delivered eight women (one in two confinements), who were permitted to arise on the third or fourth day, and this paper is an effort to explain why these women remain in perfect health. References to reports in the literature are omitted because that portion of the subject will be thoroughly considered by another writer in this discussion.

None of the cases considered in this paper were attended by laceration of the perineum. Such a condition would necessarily demand a prolonged rest in bed.

In considering this subject of early rising it would seem that we must have clear-cut ideas, and should have convincing arguments in disputing any claims of advantage for such a measure. In the treatment of most medical and surgical affections great disparity of opinion may well

obtain, since we are so often at a loss to determine the extent or intensity of the infection and the resisting capabilities of the patient. But in a consideration of this question we have not such unknown quantities; instead we have physical forces obeying well-known physical and physiological laws. We can observe and compare results, thus reaching conclusions which will enable us to forget our prejudices and place our theories of treatment on a scientific basis.

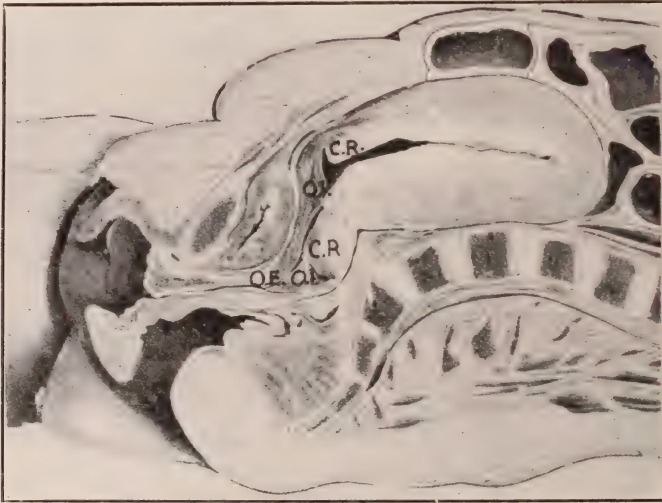
We will then consider, as briefly as possible, the following advantages claimed for the rest in bed of ten days to two or more weeks, for the average woman after normal labor, contrasting therewith some advantages of early rising:

1. To permit of a proper amount of involution of the uterus, thus obviating the danger of its displacement.
2. To permit of a proper amount of involution of the uterine ligaments and of the pelvic floor.
3. To prevent hemorrhage and embolism.
4. To prevent infection and to permit her to recover from the nervous shock and the strain to her entire system. Taking up these points seriatim:

1. *Favoring uterine involution:* After the third stage and after the primary contractions have produced the ball-like shape of the uterus, that organ assumes a flattened condition, lying upon the lumbar vertebrae. The elongated cervical lips rapidly retract to the upper portion of the vaginal canal. By the fifth day, in most cases, the intestines lie upon the uterus, crowding lower each succeeding day until, by the tenth or twelfth day, the fundus has reached the pelvic brim. At this time the patient is permitted to leave her bed. With the woman on her side or back (for she will rarely remain on her side) let us see how involution has progressed and how successfully we have prevented displacements. That involution is very defective and retropositions are common we must admit, since all writers urge the necessity of examination before dismissing the patient for the detection of such conditions; and further urge the use of glycerine tampons and pessaries to supplement nature's efforts, that the woman may not remain an invalid. B. C. Hirst² in a careful record of 6000 gynecologic cases classifies over one-third of them as due to puerperal conditions, with retropositions. Maury,³ in the Presidential Address, American Gyn. Society, 1906, says "75 per cent. of backward displacements are due to childbirth." To my mind these conditions are due to the fact that uniform involution of all parts of the organ is not possible, with the uterus in the above described position, for the reason that the normal curve of the cervico-uterine canal is distorted, causing unequal circulation, with the result to be shown presently, of unusual anemia in one portion of the uterus and with venous and lymph stasis in another portion. The fundus rests upon the lumbar vertebrae while the lower uterine segment remains in the pelvis, in consequence of which the posterior area of that segment is folded upon

itself, while the anterior area is stretched by the traction of the fundus in its new position. This is well shown in the accompanying figure, which is from a frozen section, after Benckiser.

Uterine involution is due to atrophy of muscle fibres, following a lessened blood supply. This is conceded to be a fact since the researches of Snger and of Dietrich. The pathologic stretching of the anterior, lower area of the uterus increases the normal anemia of the parts and thereby hastens involution, but the weight of the distorted fundus will not permit atrophy of the fibres in their normal relations, in consequence of which these anterior areas remain elongated. The pressure and gentle massage of the intestines and bladder on this anterior portion also hasten involution; while, at the same time, involution and atrophy of the posterior areas cannot be synchronous with that of the anterior, because of the reversed relation of the blood and lymph vessels, consequent upon the abnormal position of the uterus. This stasis may



Frozen section (Benckiser) after completion of labor. Note elongation of anterior area of lower uterine segment and folded posterior area.

O. E., external os; O. I., internal os; C. R., contraction ring.

permanently prevent complete involution, or if atrophy does occur the posterior fibres, not being subjected to traction, become shorter than the anterior, thus producing the retropositions. If now we permitted the uterus to assume its normal position early in the puerperium, with its anterior wall supported by the pubes and abdominal muscles and raised at times by the bladder, and with its posterior wall pressed upon by the intestines, the normal curve of the cervico-uterine canal would be maintained, affording free drainage of lochia and clots, thus lessening the danger of infection; and, at the same time, involution must be uniform, because the factors which produce subinvolution and retro-displacements cannot obtain.

It must be borne in mind that the human is the only mammal whose accepted conduct of the puerperium does not permit of normal uterine drainage and involution by posture.

2. *Involution of the uterine ligaments and of the pelvic floor:* We continue to hear of the ligaments as supports of the uterus, though not to the extent formerly observed. I believe we should regard only two structures as of consequence in maintaining the position of the uterus, aside from the support afforded by the pelvic floor. These structures are the ligamentum transversale colli of Mackenrodt and, to a less extent, the utero-sacral ligament, which contains much connective tissue and muscular fibres. The round ligaments are vestigial structures in the human being, and of real consequence only in the pregnant condition when they perhaps often prevent torsion of the uterus. Their true function is found in the pregnant quadruped, when they hypertrophy greatly and prevent forward "pitching" or torsion of the uterus, as the animal runs or leaps. They never atrophy sufficiently after pregnancy to draw the uterus forward, and, even in the unimpregnated, normal uterus, their insertion in the abdominal wall is anterior to their uterine origin, as recently emphasized by Fothergill. They are certainly never capable of drawing forward a retro-positd uterus, or even of maintaining it in proper position, after all our shortening operations of these ligaments, if the pelvic floor is inadequate. The ligamentum transversale colli with perhaps the utero-sacral ligaments are, as stated, of great importance, but I do not agree with Fothergill,⁴ who has recently studied the subject extensively and declared that support of the pelvic viscera depends wholly upon the integrity of the so-called ligamentum transversale colli—rather do I believe Paramore⁵ has the better of the argument when he asserts that this structure is of great importance only while the pelvic floor contributes its share of support. The subject is of much interest, but, since we are not considering the torn perineum, its final decision is not essential at this time. A point of value is that these structures (the lig. tr. colli and utero-sacral lig.) do not stretch, to a marked extent, during delivery; rather are they compressed against the pelvic walls. If they were capable of great stretching the uterus would very often be forced from the pelvis during erroneous application of Crede's method. In delivery these structures constitute the only fixed point of the uterus, and, to my mind, their attachments undoubtedly aid the retraction of the dilated os over the fetal head, and also prevent any violent abdominal-muscle contractions from forcing the uterus out of the pelvis, before dilatation of the cervix, as might occur were they composed of "loose areolar tissue," as stated by some writers.

Concerning the pelvic floor: The woman is kept in bed to permit involution of the muscles of this region that they may well sustain the pelvic viscera, when she leaves the bed at the usual time, and, it is argued, if strain were put on these muscles by early rising it would cause them to remain permanently stretched and inefficient. I have ex-

amined these structures daily, after the second day, to determine this point, and, with the woman in the standing posture, find there is no marked tension; indeed the condition is similar to that before delivery for the reason that in these early days the weight of the uterus is borne by the abdominal wall and pubis. The cervix remains well up in the pelvis, and the hypertrophied perineal muscles are capable of contracting quite firmly on the examining fingers. A very important consideration concerning early rising is that these muscular structures are called upon to exercise their normal functions, and, in response thereto, their action promotes speedy involution with return of tonicity; so that, by the time the uterus has reached the pelvis, they are capable of affording efficient support. In none of my cases did the woman complain of the sense of weakness in the perineal region, which I have commonly noted in women who have had an abundance of rest and no exercise of these muscles. In short our prolonged rest has really favored a retroposition of the uterus, and, at the same time, we have enhanced the chance of a prolapsus, by preventing rapid return of tone to the stretched and congested muscles of the pelvic floor.

3. *To prevent hemorrhage and embolism:* At the first thought prolonged rest seems a real advantage in the avoidance of sudden death from embolism. There can be no danger from hemorrhage after the first day, following a normal labor. We know very little of the causation of embolism, but according to current ideas on the subject there seems to be nothing unfavorable to early rising. On the contrary, the chief factors in the production of embolism, according to Frazier,⁶ are (a) infection which we can avoid in normal labor; and (b) "retardation of the blood current in the presence of an altered condition of the blood serum." We have always known that, during the puerperium, the pulse becomes slower and the blood pressure lessens. Williams, after quoting the opinions of many observers, agrees with Fritch that this is due to the horizontal position, with absolute rest and consequent diminution of work. Boise⁷ in an extensive review of the subject of post-operative thrombosis and embolism, says "some surgeons believe that when the musculature of the heart is in process of degeneration heart-clot is more probable if the patient remains quietly in bed; because, the contractions of the heart being less vigorous, the ventricles are never completely emptied, and the residual blood is prone to coagulation. Also that this danger is to a certain extent averted by stronger and more complete contractions, induced by the upright posture and physical exertion." I have found no report of any case occurring among the women who have been permitted to arise early in the puerperium. Were this a real danger we should hear of many cases, for we know the poorer classes have no knowledge of the modern bed-pan and commonly suit their own pleasure about resuming household duties. Edgar⁸ says he has histories of 20,000 to 30,000 cases from three out-services in tenements, with the patients arising to urinate, defecate and get to work early, de-

spite efforts of detention; yet no case of sudden death can he attribute to this getting up. From the histories of Perkins'⁹ cases of sudden death in pregnancy, none can be ascribed to embolism, as we are now considering it. It seems reasonable to assert that, in as much as no cases of death from hemorrhage or embolism have occurred on account of early rising, and as there are even no good theoretical reasons for fearing such an accident, the subject may be dismissed until we have cause for alarm.

4. *To prevent infection and to afford time for recovery of health.* The parturient canal in any position of the body is closed from extraneous infection. When the patient is lying down the vaginal outlet is higher than the cervix, favoring retention of lochia and clots, which the usual sagging of the bed augments, so that, if our delivery has not been aseptic, the development of infection is really favored, because of the absence of good drainage.

Concerning rest: The normal woman usually expresses a desire to "get up" on the third or fourth day, feeling sufficiently rested and having a return of appetite. By prolonged rest the appetite wanes, pulse and heart action lessen markedly, constipation, malaise and languor ensue, as occurs in all individuals from lack of accustomed exercise. General metabolism is impaired to such an extent that, as a result of her "rest," she requires a few weeks longer for convalescence. The demands of lactation call for healthy conditions of all organs of the body, and if the respiratory organs, the vascular organs, the digestive and secretory organs are impaired, as they must be, by the sudden arrest of accustomed physical exertions there must in turn be a delay in the prompt establishment of lactation, for the inhibition of all vital activity must have a like effect in deferring or lessening the lacteal secretion. It may be said that general massage should be practiced, in order that the rest may be most beneficial and to get the effect of exercise without the fatigue. But we know that no massage or passive movements can produce the effect of normal muscular activity—nothing can produce the same tonic effect upon the vascular system as deep respirations. Then, too, the average woman cannot well afford such dubious luxury. Dubious, indeed, for the efforts of the general nurse in performing massage are more provocative of mirth than of a generous flow of lymph and blood.

From the careful observation of a few cases and my study of the subject, I believe the following conclusions are justifiable:

1. Early rising is beneficial because the lying-down position reverses the normal curve of the utero-cervical canal, conducing to subinvolution and to retro-deviation of the uterus, consequent upon the inability to secure uniform anemia and atrophy of that organ.

2. In the early days after labor, there is an absence of unusual tension of the pelvic floor, in the upright posture, because the uterus rests upon the pubis.

3. Exercise favors involution of the pelvic-floor structures, so that by the time the uterus has reached the pelvis, these structures can afford the necessary aid to the internal uterine supports, thus preventing prolapsus.

4. Hemorrhage and embolism are not to be feared.

5. Early rising affords drainage which may prevent infection.

6. General metabolism is often impaired by prolonged rest to such a degree that lactation is inhibited and any tendency to invalidism is encouraged.

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THE PHYSICAL CULTURE OF THE PUERPERIUM.

By GEORGE GELLHORN, M. D., St. Louis, Mo.

Every gynecologist must needs make the observation that a large percentage of his clients date their respective ailments back to some previous confinement or miscarriage.

To determine just how large this percentage is, I have looked over the records of my last 500 private patients. From this number, 209 must be deducted because they were either unmarried girls or because they consulted me on account of their sterility, or else they came to my office because they were pregnant at the time. Of the remaining 291, I found that in 156 the causal relationship between confinement and gynecologic disease was evident. This last category comprises cases of enteroptosis, uterine displacements of acquired origin, prolapsus of the vagina, cystocele and rectocele, lacerations, endometritis post abortum, remnants of acute puerperal infections, chronic inflammatory conditions within the pelvis, puerperal cystitis, etc. Out of 291 women then, who had given birth to a child, only 135 remained well afterwards, while 156, *i. e.*, 53.6 per cent. became gynecologic patients after, and because of their confinements.

The poorer classes of the population fare still worse. In my material at the O'Fallon Dispensary where I conduct the clinic of Dr. Schwarz three times a week, I found that out of 100 patients, 34 could not be considered for this investigation because they were either sterile or pregnant, or else not yet married. Of the remaining 66 patients, confinement and lack of attention in the lying-in state had been the causative factors of disease in 42, *i. e.*, 63.6 per cent.

What do these figures tell us? They show us:

1. That the most normal and physiologic process, in fact, the very purpose of a woman's life, is, in a surprisingly large number of cases a prolific source of major and minor ailments in later life.
2. That many of these ailments are not unavoidable, but can be prevented by proper care both before and after delivery.
3. That, if the public but knew that these gynecologic diseases are in a measure caused by their obstetrical attendants, physicians would be forced to strictly observe all rules governing the puerperium.
4. That by doing so, not only the mothers but also the families, the community, the state, and the nation would be benefited in hygienic as well as in economic respects.

Medicine is just about to draw the conclusions from the wonderful achievements of the last century and to enter into the Era of Pre

vention. Obstetrics will have its full share in this movement which promises fair to be the crowning glory of our profession.

The proper management of the puerperium must be considered from this view point of prophylaxis in order to receive the attention to which it is justly entitled. Every good text book on obstetrics will tell us that the proper management of the puerperium begins even before labor has occurred. In a wider sense the up-bringing of the female individual, the placing of her under favorable hygienic conditions, the prevention of harmful influences in childhood—they all will tend to make a woman stronger and healthier, her labors normal and easy, her puerperia freer from complications.

If however, we limit, for the present, our discussion to the management of the puerperium proper, we find that the authorities of all countries have agreed on most points governing our conduct so that the physician need not encounter any difficulty if only he be willing to live up to the approved standards.

Yet, there are several mooted questions left which to my innermost conviction equal in importance those that have already been settled. These constitute what may conveniently be termed *The Physical Culture of the Puerperium*, and comprise the following three questions:

1. How long should a puerpera remain in bed?
2. Should she wear an abdominal bandage?
3. What physical exercise does she need?

The time-honored custom has been to keep patients in bed for nine days after childbirth. Most of the large European maternity hospitals used to dismiss their patients on the ninth or eleventh day, being forced to do so by the crowded condition of their wards. That, however, nine, or even eleven days are not sufficient was indirectly admitted by the foundation, in Austria, Germany, and France, of public institutions where these young mothers could go to bed again after having been made to get up in the maternity hospitals. There are still many who adhere to the nine days' rest, very likely out of force of habit, for their argument that the uterus has receded into the pelvis behind the symphysis on the ninth day, so that the patient need no longer observe any precautions, is unquestionably unsupported by facts.

The practice of making patients get up on the first or second day after delivery, which was first advocated and carried out by Kuestner, of Breslau, radically broke with all traditions, and led us back to the primitive conditions of savage life. The wide gulf that separates the civilized, and only too often hypercivilized woman of the twentieth century from the oft-cited squaw who almost literally sheds her pap-pouses by the way side, is ignored and the custom of the Indians praised as a long-needed return to nature. Spontaneous urination, normal peristalsis, improved appetite, and increased milk supply, quick restoration of general strength, absence of embolism, and prevention of retroflexion—these are, in short, the advantages claimed for this innovation of the

hygiene of the puerperium. The new teaching found enough support so that in consequence there have been thousands of women whose lying-in state has been shortened to a remarkable degree.

But already doubts have been expressed as to the accuracy of these claims, and warning voices have been raised. Muellerheim (Trans. Obstetr. and Gynecol. Soc., Berlin, December 13, 1907) has examined more than a thousand women who were discharged from the maternity hospitals as being in perfect condition. Many of these women required weeks of rest and treatment for disturbances which had become manifest only after the patients had been dismissed from the hospitals. It may, then, be anticipated with a great deal of probability that the late condition of such patients would leave even more to be desired.

In this respect it is interesting to read of the observations of Dr. H. J. Wagener (Trans. Obstetr. and Gynecol. Soc., Berlin, December 13, 1907). This gentleman was, for ten years, body physician to one of the sultans on the Island of Java. There are one and a half million natives on this island, and they have a large number of children. Among the Javanese, an old law prescribes that a woman must get up immediately after confinement and walk about, but not yet attend to her domestic duties. Wagener knows of no country where embolism is as frequent as in Java. He also observed high degrees of anemia among these native women which affected their mammary secretion unfavorably. Furthermore, he was surprised at the enormous number of cases of prolapse, even among women of the wealthier classes who were saved all manual labor. Finally, he states that about 70 per cent of all parturient women acquire a high degree of neurasthenia after delivery because of lack of rest, and the anemia due to post-partum hemorrhage.

These observations are significant. We know from the works of Stratz and others that Javanese women belong to the most perfect specimens of womankind as far as their physique is concerned. But even these children of nature succumb to the hardships of their barbarous custom.

My own observations closely coincide with those of Wagener. When traveling in Siam more than ten years ago, I was impressed with the fact that the Siamese girls who appear so perfect physically, lose all their charms as soon as they have become mothers. I have already mentioned this in my publication: "Medizinische Reiseerinnerungen aus Siam," Deutsche Medizinische Wochenschrift, 1899, No. 9.

The average white woman, on the other hand, cannot compete with her Indian or Javanese sister as far as physical endurance is concerned. As the greater part of a city population belongs to the wage-earning classes, so belong the majority of all parturient women to these wage-earners. Look at the narrow-chested salesgirl in a department store, look at a stoop-shouldered factory girl, or a half-starved down town stenographer, and you will recognize certain types. Can you expect any

power of resistance from women who were brought up under unhygienic conditions, who live in unsanitary surroundings, who are insufficiently clothed and poorly nourished? And yet, they fare not much worse than the women of the other extreme, the wealthy women. These suffer from a life of excessive refinement which is bound to weaken the organism. Athletic girls who keep up their splendid standard of physical perfection after they are married, are few and far between. The majority lapse into an existence filled with artificialities; their food is dainty but not nourishing; their exercise is motoring; their nerves are subjected to a kaleidoscopic variety of stimulations without any relaxation.

What these women, the wealthy as well as the poor ones, need after having given birth to a child is *rest*. *They have just finished a physical task of a magnitude such as no man could undertake unless he had carefully trained himself for the work.*

The ultra-modern obstetrician, it is true, is willing to concede her one whole day of rest and perhaps a part of the second day, and still is in danger to appear rather slow and backward next to Kroenig of Freiburg, who makes his puerperae get up as early as eight hours after confinement. One feels tempted to insist that we should leave it to automobilists to exceed the speed limit.

Pregnancy and childbirth mean an upheaval in a woman's life, and now a period of rest, of absence of new demands on the different organs is required for a proper readjustment. The heart has hypertrophied during pregnancy, the kidneys have been taxed to their utmost, the blood has been flooded with toxins. Every internist in charge of a case of heart lesion or of an affection of the kidneys would enforce rest upon his patient in order to avoid an additional strain upon the weakened organs in question. The obstetrician, however, thinks he may safely ignore such precautions. It is true that the changes in the maternal organism brought about by pregnancy are still within physiologic limits, but they are so near the line that separates them from pathology that, in spite of the wonderful healing power of nature, they might easily slip beyond that line. It is also true that the advocates of rapid obstetrics, if you will pardon this expression, claim that they select their cases and permit only those to get up who are perfectly well; but it must not be forgotten that there are conditions which will become manifest only after a certain length of time. The followers of this latest teaching avow that they permit their patients only to leave the bed without walking about, much less without doing any work; but anyone who is familiar with actual conditions in daily practice must admit that such abstinence is adhered to only by a very small minority of well-to-do women who have enough help at their disposal. The overwhelming majority of women so soon as they are out of bed, must needs contribute to the running of their households.

The chief mode, then, of preventing any possible ills, is first of all prolonged rest. During this time, the circulation will be restored to normal conditions, edemas will quickly be absorbed, the involution of the uterus and the remainder of the genital organs will proceed without disturbance. Nor should the obstetrician neglect the mental aspect of the problem and weigh too lightly the psychic strain his patient has been subject to for nine long months. Here, too, a prolonged rest will serve as the best prophylaxis of mental disturbances from the mildest degrees of neurasthenia to the serious cases of puerperal mania.

It is claimed that the women, particularly of the middle and lower classes, have not the time to spend idly in bed, that they have not the means to remain dependent upon nurses for so long a time. How is it then, I wish to ask, that they *must* have both the time and the money when one of the ailments caused by a shortened and otherwise wrongly directed puerperium, *forces* them to go to a hospital later and be operated upon and stay away from their respective homes much longer than would have been necessary had they remained in bed a little longer in the first place? In fact, had they taken care of themselves a little longer, it would have consumed less time and less money in the end.

I am willing to admit that the custom of getting up too soon after confinement is so deeply rooted that the people will object to any innovation. It is true that nothing is so hard to overcome as old traditions however wrong they may be. But I am convinced that the masses can be educated if only the physicians themselves are aware of the necessity of my postulate. The history of medicine furnishes ample proof of this statement. How long then should a patient stay in bed?

Broadly speaking, I believe that a patient should stay in bed until the muscles and fasciae of the pelvic floor and the ligaments of the uterus have regained their tonus and are able to hold the uterus, which is still enlarged and heavier than it should be, in its normal place. This condition has arrived towards the end of the third week. During this time involution of the uterus has made good progress and will, if nothing unforeseen occurs, be complete within another three weeks. During the two and a half or three weeks' rest in bed, the general organism has had sufficient time to recover completely from the strain of pregnancy and labor, and the various organs of the body have resumed their normal functions. It will, of course, be necessary to individualize in every case and to prolong the rest in bed whenever indicated. It must, however, be clearly understood that eighteen days constitute the minimum.

Prolonged rest in bed, however, is in itself not sufficient to accomplish the desired result. There are many women who remain in bed two weeks and longer after childbirth and yet have flabby abdominal walls. We must, therefore, resort to additional means in order to strengthen the musculature of the abdomen.

Immediately after labor, the abdomen of the puerpera is flattened from before backward and, in a general way, presents a picture which

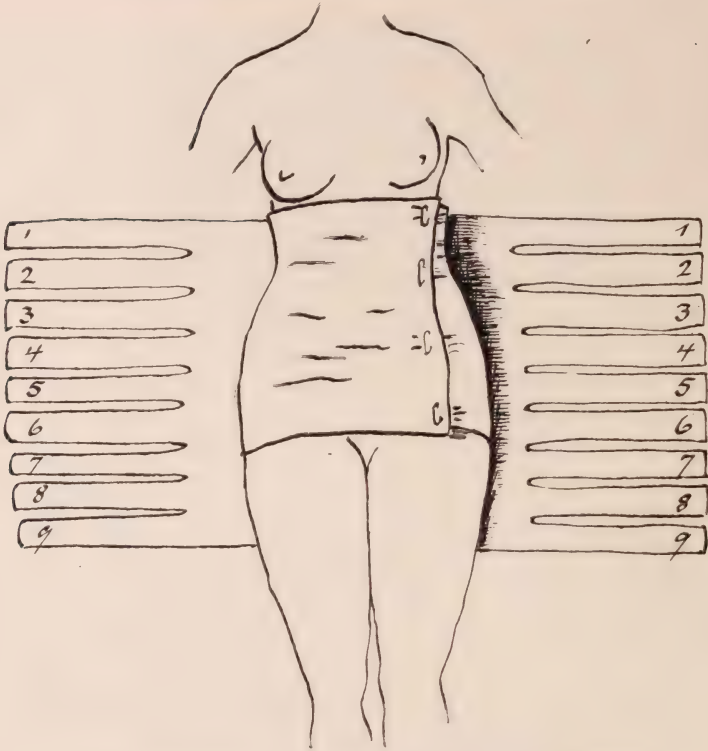


Fig. 1.—Abdominal Bandage for the Lying-in State.
(After Semmelink.)

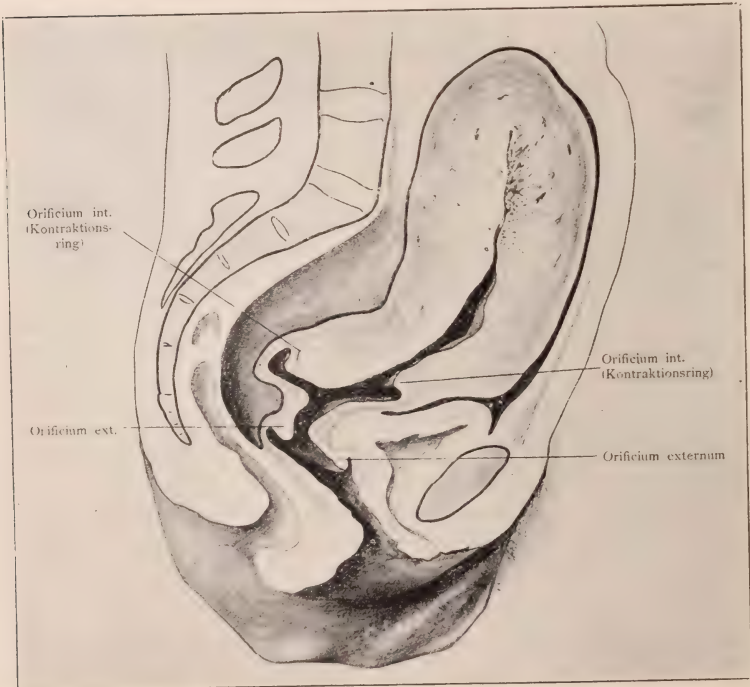


Fig. 2.—Uterus on First Day after Childbirth.
(From Bumm, Grundriss zum Studium der Geburtshülfe, 1903.)

we are accustomed to associate with ascites. The flanks are filled out while the center is depressed. The abdominal viscera which had become more and more crowded during pregnancy, find all at once abundant space within the peritoneal cavity. The intestines, in particular, are now free to expand without any restraint. You all have encountered cases of meteorism which occasionally may assume alarming proportions. This distension of the bowels continues to exercise a strain upon the already overstretched abdominal muscles. The undue accumulation of gas within the bowels may produce a paralysis of the intestines; proper peristalsis is prevented, and the natural sequels of this disturbance must needs follow. The prophylaxis of this condition simply consists in the application of an abdominal bandage. The correctness of this principle has long been recognized in England and America, and the ever increasing number of new models recommended proves that also in Germany the need for bandaging the abdomen in the puerperium has at last become widely apparent.

There remains only the problem: What kind of a bandage should be applied? The general practitioner usually helps himself with a towel or a piece of cloth pinned more or less tightly over the abdomen. Such a make-shift bandage does not remain in place unless it is held down by a tight perineal strap, which in itself is very annoying to the patient, particularly when a tear of the perineum has been sewed up. The slightest movement of the patient causes such a bandage to wrinkle in the back and thereby produces discomfort. Others put straps of adhesive plaster over the abdomen after confinement, but this often irritates the skin and causes eczema. Moreover, as the shape of the abdomen changes these adhesive plasters must frequently be re-applied. On several occasions I have found patients with a piece of cheese-cloth or gauze loosely wound around the hips. This sort of a "bandage" requires no comment.

If you bear in mind that a bandage should give support to the weakened abdominal muscles and at the same time be of such a character as to rapidly adapt itself to the ever changing shape of the abdomen, you will not fail to appreciate the advantages of a bandage such as I here demonstrate to you. This bandage was described by H. B. Semmelink of Holland in *Zentralblatt fuer Gynaekologie*, 1905, No. 52. It consists of two pieces of linen, muslin, or flannel, which have been sewed together in the median line. The inner piece extending from the costal arch to the pubic bone is tightly pinned over the abdomen. The outer piece extends from the costal arch to the middle of the thighs. It is torn into a number of tails which have been overcast in order to prevent their tearing any further when the tails are tied over the inner bandage. I have used this bandage in all my private cases for almost three years and have been uniformly pleased with the results. The bandage thus applied closely follows the outlines of the body. It can not slip nor wrinkle in the back. It gives a pleasant feeling of support. It

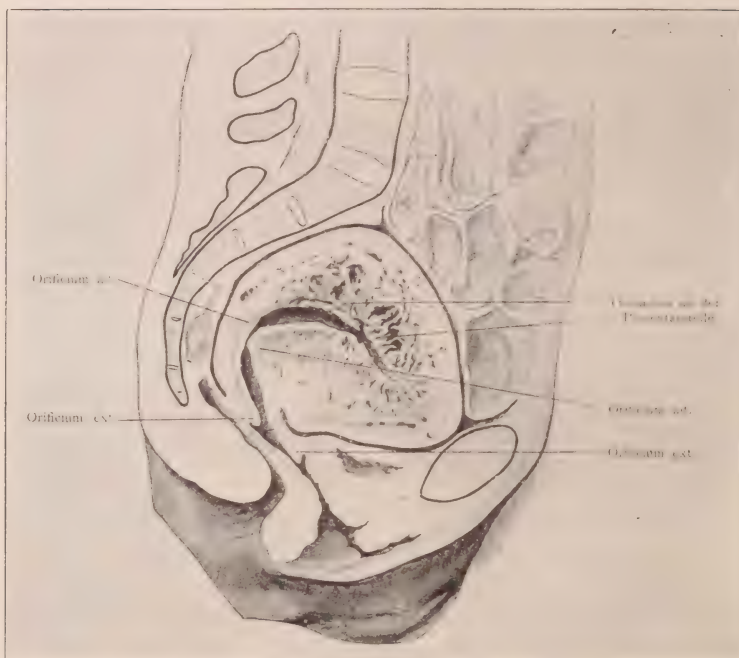


Fig. 3.—Uterus on Fifth Day after Childbirth.
(From Bumm.)

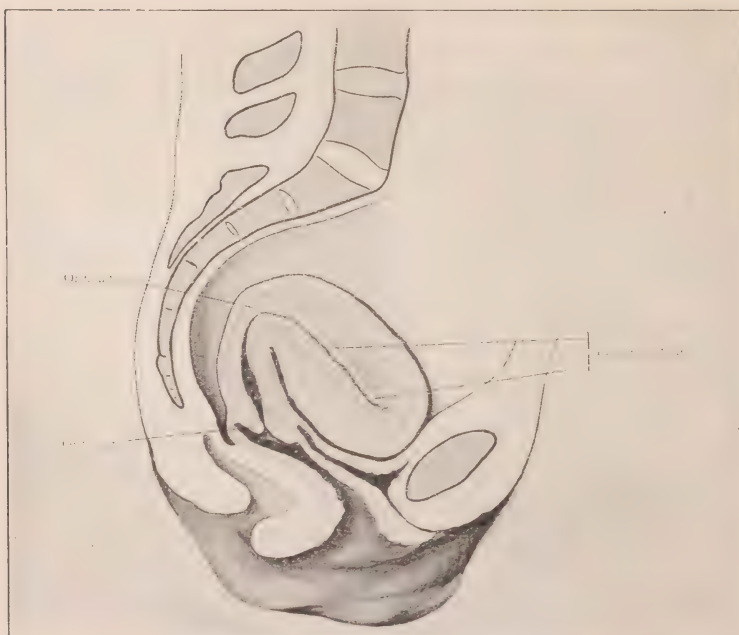


Fig. 4.—Uterus on Twelfth Day after Confinement.
(From Bumm.)

holds the legs together and thereby prevents any strain upon perineal sutures; also the vulvar pads are kept in place. Whenever the bandage becomes loose, we simply retie some of the tails. I usually apply this bandage one or two hours after confinement when the danger of atony has passed, and the uterus needs no longer be controlled. The bandage is worn day and night as long as the patient is in bed, and is taken off only during physical exercises, of which I shall speak presently. For urination and defecation the lower part of the outer bandage must be loosened and turned upward. This requires a little more time than with an ordinary binder, but after all a bandage is employed not for the convenience of a nurse, but for the benefit of the patient. The advantages of this bandage are obvious. It fits tightly and comfortably. It is a simple device and readily applied with a little practice. The material costs but a few cents, and each patient can easily prepare three or four of the bandages herself. The cloth is washable, and a fresh bandage can be put on whenever necessary. If desired, they may be sterilized with the other dressings. My results with this bandage have been more than satisfactory. Patients who had experience with other binders in former confinements, have remarked on the greater comfort of this bandage, and the nurses, as a rule, have speedily learned how to apply the bandage properly.

If by means of a bandage we accomplish better involution of the abdominal skin and muscles, we also save the appearance of the patient from disfigurement. This point is important enough. Look at the pictures by Albrecht Durer and Hans Holbein, those great masters of the middle ages, who so inimitably portrayed the people of their time. Every one of their matrons has a so-called "high stomach." Such a disfigurement was then considered inevitable and is held so by many even to this day. But it is necessary to eradicate this false belief, and the physician should be held responsible if by his neglect the patient loses her previous good figure.

Of greater importance even than the application of a good bandage is the question of physical exercise in bed. It is clear that mere rest in bed will weaken the muscles from inactivity. Hercules himself would have lost his strength had he been confined to bed for several weeks. To accomplish our object, namely, to render the young mother as strong, or stronger than she was at the time of her confinement, we must add systematic physical exercise.

The persistent recumbent position on the back which was enforced by most men up to a few years ago, has now been generally abandoned. The patient need not lie on her back longer than twelve hours at most in order to give the uterine sinuses sufficient time to close securely. As early as the second day, the patient should move freely from side to side without, however, trying to raise herself up. I believe that thereby the most frequent sequel to childbearing, viz., retroflexion of the uterus, can very often be prevented. As you all know, the uterine body regains

its tonus much earlier than cervix and vagina. These pictures represent the conditions on the first, fifth and twelfth day post partum, respectively. The heavy corpus uteri falls forward into a pronounced anteflexion because of the softness of the cervix and lack of support. If, however, the patient lies on her back without moving, the uterine body can just as well fall backward, particularly if care is not taken to empty the bladder regularly and in short intervals of from four to six hours.

More systematic physical exercises should begin on the eighth day post partum, or on the twelfth day if a perineal laceration had to be repaired. It is necessary to give detailed instructions in every case and to explain the reason for these exercises. One should begin with one kind of exercise and add another every day. The exercises should be taken morning, noon and night, and the abdominal bandage taken off during these times. The patient lying flat on her back, unsupported by pillows, is told to raise her head and shoulders slowly as high as possible without the aid of her arms. Thereby the recti muscles contract coming nearer together and abolishing the ever present diastasis. This can be readily demonstrated to the patient. Then the knees are flexed and drawn toward the body—first one, then the other, and finally both together. Next, the legs are raised straight up, first one, then the other, and finally both. This exercise strengthens the lateral muscles of the abdomen. Now the patient turns on her abdomen and raises both head and feet, thereby exercising the muscles of the back. The feet, too, require frequent bending and rotary motions to overcome any future difficulties in walking during the first few days after getting up. The muscles of the pelvic floor can be greatly strengthened and relaxation of the vaginal outlet frequently be prevented by teaching the patient to contract her vagina. Finally, the elasticity of the abdominal skin may be restored to a remarkable degree if the patient learns a rotary motion of her abdominal walls, which is familiar to all of you from the exhibitions of Egyptian dancers. I believe myself to have been the first to introduce this exercise for medical purposes.

There may be some who object to such callisthenics in bed, perhaps, because it takes too much time to devote attention to these details. As to this, the woman who pays for your services, has a good right to demand as much of your time as is necessary to insure her future well-being. These exercises are indispensable to a complete restoration. Dr. von Wild, in Cassel, was the first to recommend them for the purpose of relieving the obstinate constipation after childbirth, and his suggestion has since been widely accepted.

A woman who has had sufficient rest in bed and whose muscles have been strengthened by methodical exercise, presents a picture quite different from the appearance of a young mother as unfortunately we see it only too often. The pale, drawn look, the attacks of vertigo or even fainting, the utter exhaustion—they all have vanished. In their stead, we find a healthy looking face with normal complexion, in spite of an

indoor life of several weeks, a straight figure, an elastic step—no physical infirmity that may interfere with the enjoyment of life or mar the happiness of young motherhood. And is this not a goal worthy of our highest efforts as obstetricians?

CONCLUSIONS.

1. According to my statistics, out of 291 mothers with gynecologic ailments, 156 were sick ever since they had given birth to a child.

2. In the overwhelming majority of these cases, the origin of their ailments could be traced back to a faulty management of the puerperium.

3. In a well directed puerperium prophylaxis must be considered first and foremost.

4. The object of obstetrics is not merely to deliver a living child, but also to restore the mother to perfect health.

5. My own remarks have been limited to a few points of prophylaxis on which a consensus of opinion has not yet been achieved.

6. I maintain that a puerpera should stay in bed not less than eighteen days.

7. Every puerpera should wear an appropriate bandage.

8. The model described by Semmelink appears to me most advisable.

9. Mild methodical exercises started in the second week after confinement, and continued for several weeks after patient has left the bed, are indispensable to a complete restoration.

10. Every puerpera should be examined carefully six weeks post partum before she should be discharged from medical observation.

HYGIENE OF THE MOUTH, NARES, PHARYNX, INTESTINE,
SKIN, MUCOUS MEMBRANE IN GENERAL; OF LYMPH
BODIES AND LUNGS. PREVENTION OF COLDS.*

By NOBLE P. BARNES, M. D., of Washington, D. C.

If attending to seemingly little things, things frequently neglected and things approaching Godliness, are important, then hygiene of the mucous membranes must be regarded as a consequential requisite in the prevention and cure of disease.

In the first instance a mucous membrane, to be clean and healthy, must have free drainage. Therefore in the very beginning, the adenoid vegetations and the enlarged tonsils, that are present in a majority of tuberculous children, must be promptly and completely removed.

The frequently performed tonsillotomy may, to a degree, relieve obstruction, but the decapitated tonsil becomes the submerged, partly concealed old fort that harbors various organisms and affords an open path for the invasion of the tubercle bacillus. Nothing short of enucleation of this degenerated and diseased structure will permit of developing a healthy mucosa at that point; and only by complete adenectomy and tonsillectomy will the turbinates reduce to their normal size, free drainage of the nasal mucosa be established, and proper breathing maintained. Only by free drainage and free air space in the nasal cavity can we hope for relief and cure of ear disturbances, recovery of diseased pulmonary and gastrointestinal mucous membranes, or arrest and non-recurrence of a tuberculous process.

Having obtained these first measures, the upper air passage will usually take care of itself unless there is a deflected septum, bony spurs, polypi or chronically enlarged turbinates that require additional operative measures. If the mucosa is thickened the employment of a mild alkaline antiseptic solution, followed by mentholated alboline will assist in affecting a healthy condition.

Laryngoscopic examinations should be made when possible, as a local infection may thus be discovered that might be the prime cause of the cough and hemoptysis. In the event of actual lesion the usual local treatment plus rest to involved structures, is imperative. In simple catarrhal conditions of the air passages, nebulization with aromatic, antiseptic oils, blended to produce a pleasant and soothing effect, is of undoubted value.

The rising toilet for all individuals who possess sensitive mucous membranes, and those inhaling city dust, should include the employment

*Read in Section IV., International Congress on Tuberculosis, Washington, D. C., 1908.

of a non-irritating nasal douche and cold water gargle following the usual soap and brush to the teeth and gradually cooling shower bath. A free change of air in the lungs is next in order, the method depending upon the physical condition; and lastly, inhalations for five or ten minutes of mentholated, aromatic oils.

During this time much of the mucous collected in the larynx, trachea and bronchi will be expelled. This means better appetite, better digestion and less nausea from mucus lifting after breakfast. Besides these local measures, the one drug, where it is not contraindicated, that will assist in promoting a healthy condition of the respiratory mucosa, is iron iodide, given in small, tonic rather than alterative doses.

An active inflammatory process in any location demands rest of the affected part and in no instance is it more needed than in a lung involved in an acute tuberculous invasion. Here, lung stretching by exercise or by high altitude, will not only prevent healing and scarring, interfere with the formation of a protective membrane to institute caseation and calcification, but favors further invasion of lung tissue and induces hemoptysis.

After the inflammation has subsided and the disease is quiescent, gradual expanding of the lung should be attempted; always under the direction of a competent observer. Physical training will yield excellent results if judiciously applied. Removal to a stimulating climate may benefit lighter forms of the disease, but over-exercise or over-work may result in impairment of both lung and body.

In practicing lung gymnastics two precautions should be observed. First: Never expand the chest beyond the degree of comfort, for fear of tearing open old wounds or rupturing air cells; the latter condition in itself being followed by infection, as witnessed in many athletes. Second: Expel the air through the nose, instead of the mouth or puckered lips as taught by most teachers of physical culture, because the turbinates are cooled by inhalation, warmed by exhalation and dust caught upon the nasal hair and mucous membrane will be blown out instead of drawn further in.

Only second in importance is the mucous membrane of the digestive tract and in some instances it takes first place. As a route for tuberculous invasion it is quite as common in infants and young children as is shown in recent experiments. Besides the organisms that may be carried to the mouth by infected food and constant application of unclean hands and toys, the bovine tubercle bacillus in its pathogenicity to children is to-day a proven fact.

Hess¹ in reviewing the cases of primary mesenteric gland tuberculosis in which the type of bacillus has been differentiated, demonstrated over 60 per cent. to have been caused by the bovine type. Among children this type greatly prevailed, whereas in adults the majority of infections were with the human variety. There is strong evidence that these organisms are as similar as different families of the human race, only

changed by environment. In this event most tuberculous infection must occur during the milk feeding age.

Certainly the only rational method of keeping the digestive tract clean is to prevent the introduction of infection. We can pasteurize and kill the organisms in milk, preferably by a process of lower temperature and aeration, or rear a breed of cattle immune to tuberculous disease as suggested by Gunn.² We can give sterile animal broths and other foods we know to be clean. But all this is "love's labor lost" unless we can prevent the numberless methods of infection that come from a lack of correcting the little things.

The abominable pacifier is in the nurse's mouth, then in the baby's, then on the floor and again in the baby's mouth. In this cycle the child can get several thousand organisms. Further, these articles to suck upon deform the mouth and palate, keep up a constant hyperemia, congest the post-nasal and tonsillar glands, and lastly, create a habit of having something in the mouth. So that by the time the child is old enough to walk, and up until school life, everything from strings to pennies finds a resting place in the mouth, usually accompanied by one or more dirty fingers. From school life on this habit continues in the form of gum chewing, all day suckers, pencil-wetting and nail-nibbling.

When we are confronted with an infected digestive mucosa, we must depend upon the hydrochloric acid of the stomach to a great measure. If it is deficient we must supply it.

This acid is nature's antiseptic for the stomach and stimulates the flow of nature's intestinal antiseptic, the bile. Internal antiseptics should be administered in these cases as well as to those who are too young to keep the secretions of the respiratory membrane from slipping into the stomach.

Another evidence of neglecting little things in the growing child is the lack of attention to the teeth. Practically all children, for a considerable period, absorb into their lymph channels and carry into their stomachs hosts of organisms from decaying teeth that should be cleansed and filled, or extracted. The popular mind must be disabused of the idea that the first teeth can not be disturbed for fear of interfering with the second set.

There is just one thing to do with the tuberculous lymph bodies when they can be reached; prompt and complete removal of the chain. Seventy-five per cent. of school children will exhibit enlarged lymphatics due to excessive metabolism, but these can be reduced by diet, hygiene and proper medication. Sodium salicylate and iron iodide are appropriate remedies.

Wilder³ states that "the earlier statistics as to frequency of tuberculosis of the eye must be regarded as rather misleading;" as Groenouw suggests, "with a growing knowledge of the subject, the number of cases of tuberculosis of the eye is naturally increasing. Brejski holds, ten per cent. of cases of parenchymatous keratitis are tuberculous. Diez⁴ estimates the percentage as high as fifty. Haas claims that as high as

fifty per cent. of all cases of iritis is tuberculous. Many observers, like Greef, Mickel and others, find by histologic examination, evidence of tubercle in the uveal tract that was not apparent during life." This suggests the need of the prophylactic eye toilet that can be carried out with the usual morning and evening toilet, and consists of non-irritating, antiseptic lotions applied with the convenient eye cup.

Ear infection is usually from within, being an extension of inflammation from the nasal cavity, due to lack of drainage and air space. Relieving this condition as suggested and with cleanliness to the external auditory canal we will avoid trouble from this source. Examination of the infant's ear should be routine. Disturbances here may cause the careless observer to overlook the beginning otitis and treat the baby for most anything, from colic and bronchitis to perverted disposition and meningitis.

To do these things that have been enumerated, to keep the mucous membranes clean and healthy, means in itself one of the first steps in preventing the so-called "taking cold." The expression "catching cold," "cold in the head, chest or back" means nothing to the trained mind. If the mucous membranes are free, open, well drained and healthy, there will be no army of organisms waiting for a lowering of resistance by exposure to atmospheric changes, fatigue or hunger, to operate in the production of rhinitis, bronchitis, tonsillitis or rheumatism.

In addition to hygienic measures mentioned, we can assist in establishing a considerable degree of resistance by proper bathing. The usual hot bath must be discontinued. The tepid gradually cooling shower accompanied by friction should be adopted; the temperature depending upon the individual case and lowered only to the point of getting good reaction.

In short, measures to be instituted for the "prevention of colds" are as follows: Proper hygiene of the skin and mucous surfaces; proper hygiene in diet, sleep and living; avoiding fatigue, long hunger, mufflers and chest protectors; avoiding dust and poorly ventilated places. Churches, theatres and even schools are often filled with hot, germ-laden air; and the truant, though regarded as a bad boy, must be credited with good sense in preferring the open air. For no exercise in the play park can overcome the injury from studying in foul-aired school-rooms or sleeping in closed apartments. Nor can fresh air and good food overcome disease caused by defect.

The hygiene of to-day should be taught in the school, not about the effect of tobacco and alcohol, but that the avenues to infectious diseases are through the skin and mucous membranes and that they must be kept clean and healthy.

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THE APPARATUS USED BY THE GREEKS AND ROMANS
IN THE SETTING OF FRACTURES AND THE
REDUCTION OF DISLOCATIONS.

By JOHN S. MILNE, General Practitioner in Hartlepool (a smoky town
on the Northeast Coast of England).

Let me point out that the scope of the paper does not cover the whole ground of the wide knowledge possessed by the ancients on the subject of fractures and dislocations. It is merely an enumeration of the apparatus used in the treatment of these, with short extracts indicating the method of employing them. The authorities on the subject are Hippocrates, in his works on Fractures and Articulations, 460 B. C.; Galen in his commentaries on these (130-200 A. D.); Celsus (about 20 A. D.); a chapter by Heliodorus preserved in the works of Oribasius (325 A. D.), and the little encyclopedia of Paulus Aegineta (6th Century A. D.) I have also taken a few illustrations from the *Armamentarium of Scultetus*.

In the treatment of fractures the ancients employed, as we do to-day, splints, pads and bandages.

Hippocrates in his book on *Fractures* gives a very complete account of the method of applying these.

First of all, the limb was smeared with a waxy composition, called cerate, in order to prevent the bandages from slipping. The bones having been got into position by means of extension and other manipulations, a roller bandage soaked in cerate (Fig. 1) was fixed by one or two turns round the seat of the fracture, and then carried upward for several turns. (Fig. 2.)

Next, a second waxed bandage was applied, beginning as before at the fracture, passing downwards for several turns (Fig. 3), and then upwards to end at the same spot as the first bandage.

Next, elongated pads, formed of folded linen and stiffened with cerate, (Fig. 4) were laid along the limb in such a way as to cover it completely, and fixed by the application of roller bandages which had as before been dipped in cerate.

No splints were applied at this time, so that so far, the treatment corresponds in principle to the immovable bandages of gum and chalk or plaster of Paris which we employ to-day. On the third day, the swelling of the part having subsided and the bandaging having become somewhat loose, the whole was removed and the limb bathed with hot water, and the bandages and pads were applied as before.

Three days afterwards, *i. e.*, on the seventh day from the accident, the swelling was expected to be quite gone, and the bandages again



FIG. 1. Waxing a bandage. After Scultetus. Double spatulæ of the form shown are found among ancient Roman instruments from Pompeii.

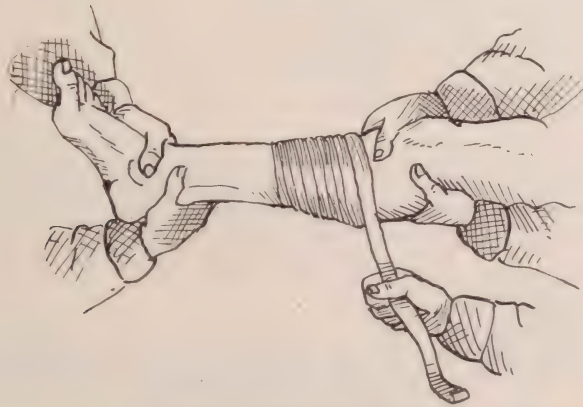


FIG. 2. Waxed bandage fixed over site of fracture and carried upwards for several turns. After Scultetus.

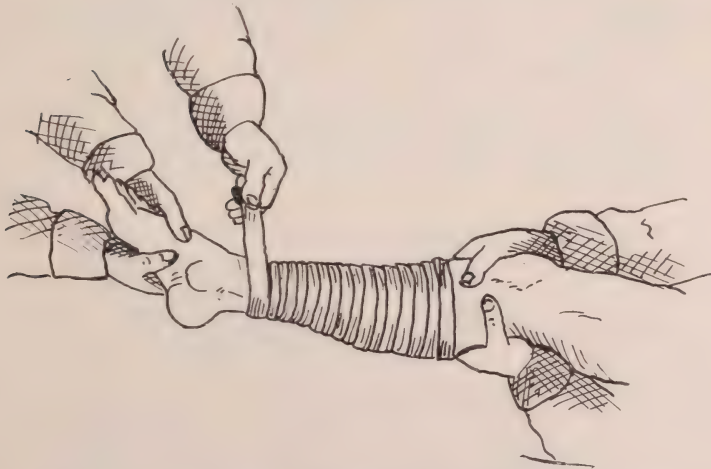


FIG. 3. Second waxed bandage fixed over the site of fracture and carried downwards for several turns, preparing to return upwards and end at the top of the first bandage. After Scultetus.

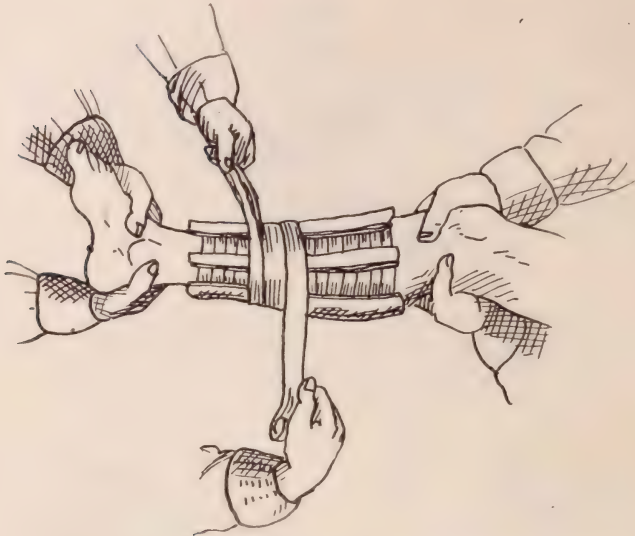


FIG. 4. Applying the waxed compresses over the bandages. After Scultetus, but Hippocrates says the compresses ought to completely surround the limb and not be separated from each other by a space as this figure shows. It makes the pads look like splints.

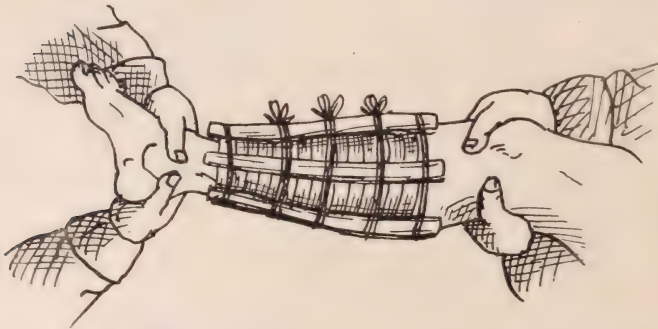


FIG. 5. Applying the splints on the seventh day. After Scultetus. First the two bandages have been put on, then the waxed pads, the bandaging to fix which can be seen under the splints.

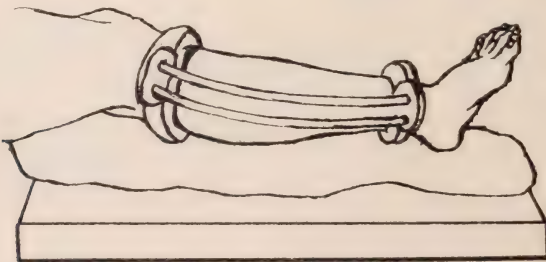


FIG. 6. Splint for leg-fracture described by Hippocrates. Made of elastic rods fitting into loops on shackle-like pads above the ankle and below the knee. After Littré.

loosened, and now these having been removed and the limb having been bathed, the pads and bandages were put on as before, but this time splints were applied in addition. (Fig. 5.) These were narrow and rod-like, and were arranged all round the limb, the breadth of a finger intervening between each, and were kept in place by three or four strings tied just tight enough to keep the splints in position without their action contributing at all to the compression of the part. The splints were examined every third day till bony union had taken place, and the whole dressing was reapplied whenever it became loose.

In addition to the fixation by the above methods the part was further put at rest by a sling, in the case of the upper limb, and in that of the lower, by elevating it in bed on a pillow or a box splint.

Compound fractures were not treated with splints until the wound had healed, but were lightly put up in pads and bandages and laid in a box splint and dressed frequently. If there was much discharge, a goat's skin was placed beneath, to catch the discharge and embrocations.

We shall now consider a little more fully each of the materials mentioned above.

Roller Bandages. Hippocrates says that the bandages should be clean, light, soft, thin, and without seams, yet strong enough to bear stretching. Their breadth should be proportionate to the part under treatment. They should be three, four, or five finger breadths broad, and as many cubits in length.

Rolling should be practiced with both hands together, and with either separately, and it should be done quickly, elegantly and without causing discomfort to the patient.

Sometimes the turns were to be made to the right, and sometimes to the left, and sometimes a double headed bandage was to be used and applied crosswise. After the bandage was on, it was to be finished off by stitching with a needle and thread, lest a knot should cause discomfort.

All the methods of applying the roller bandage which we now employ, together with many other complicated methods, are described by the ancients, and will be found described and figured in the works of Oribasius in the edition of Stephanus (*Medicæ Artis Principes*) and also in Scultetus.

Pads (or "Compresses"). These were made of linen folded three or four times. They were three or four fingers in breadth, and their length was proportionate to the part.

They were applied longitudinally in such number as to encircle the limb.

In applying splints extra pads were put on parts where the bone projected, as at the ankle.

Splints. Hippocrates says these should be smooth, even, rounded at the ends, and concave. They should be secured with strings. Those at parts where bone was prominent should be short so as not to press on the part.

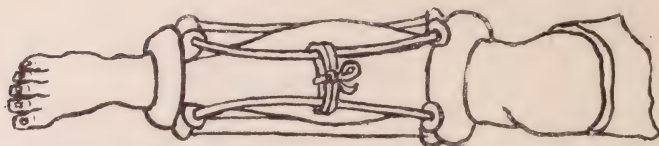


FIG. 7. Top view of the same to show the tying together of the two top rods.



FIG. 8. Box splint or "canal" after Scultetus.

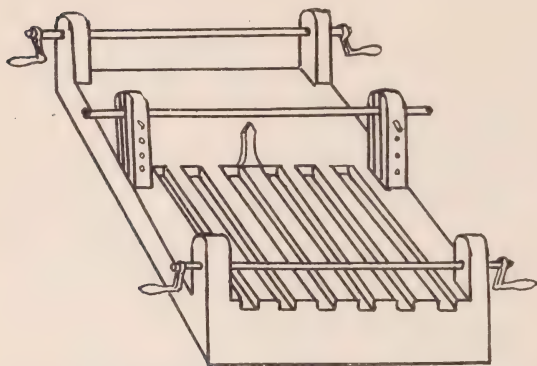


FIG. 10. Scamnum of Hippocrates after Littré.



FIG. 9. The Glossocomium of Galen, applied for fracture of the thigh. After Vidius.

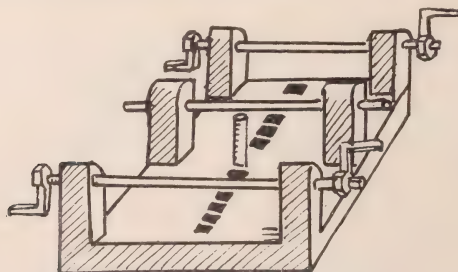


FIG. 11. Scamnum of Hippocrates after Vidius. It differs from the description of Hippocrates in having slots instead of grooves, but it is the oldest figure of the instrument.

Palladius says that they should be made of the wood of the lime tree, or, where this could not be procured, reeds were to be used. They were to be round, and secured with three loose fillets or ribands, one at their upper, and one at their lower end, and one at the middle.

Paulus Ægineta says that they should be arranged not more than one finger's breadth from each other.

Special Splints. A special form of splints for fractures where the deformity could not be kept reduced by ordinary methods is described by Hippocrates.

"One should sew two round pads of Egyptian leather, such as are worn by persons confined for long in shackles, and the pads should be deeper on their aspect facing the wound, and shallower on that facing the joint, and they should be well stuffed and soft and easy fitting, the one to the part above the ankle, and the other to the part below the knee.

"Each pad should have two loops on its inner aspect and two on its outer. (Fig. 6.)

"Then taking four equal rods of the wood of the cornel tree, each of the thickness of a finger, and of such a length that they can be fitted into the loops by bending, adjust them, two on the inside of the leg and two on the outside.

"They should be of such a length that suitable extension may be kept up.

"The two which are uppermost (as the patient lies on his back) may be tied together. (Fig. 7.)

"If the apparatus does not fit properly it will do more harm than good, as indeed any other contrivance will."

Galen, commenting on this passage, says that the pads which Hippocrates describes as round are really like snakes or like the sausages which butchers make, by filling intestines with chopped meat or other such food.

Minor Splints. In fracture of the lower jaw Hippocrates bound the teeth together with gold wire, and applied a light splint of moulded leather on the outside of the jaw.

In fracture of the nose, Paulus Ægineta says that tents of cloth were applied to each nostril. Some sewed into these the quills of goose feathers, so that the patient could breathe through these.

Box Splints. Hippocrates says that he is rather at a loss whether to recommend box splints or not. They are of some use, but not of so much as many suppose, and a board, unless padded, is rather an uncomfortable thing for a limb to lie on. (Fig. 8.) However, the common people have more confidence in the treatment where they are used; and they are useful in such times as the bed requires rearranging or the patient has the bowels moved.

If used at all they should be of sufficient length. Those for fracture of the thigh should reach from the hip to the heel, for, if flexion of the knee be allowed, distortion of the part is caused.



FIG. 12. The scammum in use for Dislocation at the astragalus.

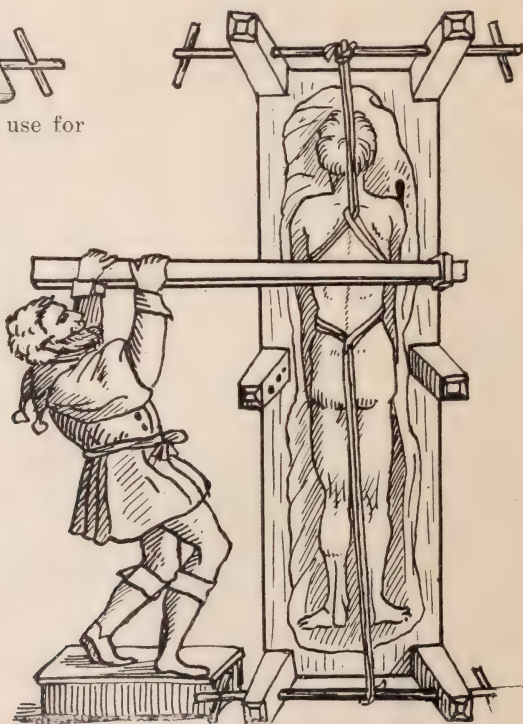


FIG. 13. Reduction of a gibbosity of the spine by the scammum.

Nothing, however, is more convenient than a cushion or something similar, either of wool or linen and not hard. It is to be made hollowed along its middle, and laid below the limb. In any case a shawl should encircle both splint and limb, as children are swathed in bed.

Paulus Ægineta describes the box splints as of wood or earthenware. Some applied them only in cases of compound fracture. A better means of steadying the limb, he thinks, is to make a long pillow of a garment, and to fold it up at the sides, round the limb, and to steady the whole with pillows. The garment should be lined with a skin, to catch the embrocations.

Galen says that they should be rounded externally and hollowed inside. They were made of different kinds of wood.

Celsus says that they should have in their lower part a hole for the escape of discharge, and they should have a foot plate.

Glossocomium of Galen. This ingenious and useful splint, says Galen, had been invented by the practitioners of his time.

It took its name, he says, from the Attic name for a box used for storing papers of value or which one wished to conceal or to carry on a journey, and was variously spelled glossocomum or glossocomium or with two t's instead of two s's. (Fig. 9.)

It might be applied to the femur or the tibia, and was to be used continually till callus had formed.

Galen gives a full description of it, but its principle is best understood from a drawing such as that given by Vidius or Scultetus.

On rotating the handle the upper and lower fragments are simultaneously pulled apart.

Dislocations. The different varieties of dislocations of the joints were known to Hippocrates nearly as completely as we know them to-day, and the various manipulations necessary for their reduction are fully described.

Cases which resisted reduction by means of ordinary measures, such as extension over the back of a chair or the lower half of a door in the case of the shoulder, were treated by more powerful apparatus, improvised or kept for the purpose.

Bands for extension and counter-extension were applied. These consisted preferably of supple leather, but in the absence of these Hippocrates says that iron chains, cords, or the ropes for ships may be used, being wrapped round with woolen cloth at the parts where they are to come in contact with the skin.

In reducing dislocations of the fingers, Hippocrates says that nooses formed from the twisted bast of palm shoots are suitable. Aristotle refers to these in his book on the *Parts of Animals*.

The power to be applied was obtained by means of winches or drums on axles, levers, wedges, screws and pulleys.

Hippocrates only mentions three of these: "Of all the mechanical instruments used by men the most powerful are these three, the winch,



FIG. 14. The scammum in dislocation of the elbow, after Vidius.



FIG. 15. Reduction of dislocation of the Humerus by the scammum. After Vidius.

the lever and the wedge." He does not mention the screw, though it is most likely that the Greeks of his time knew of it, but we shall see that later the Greeks applied it, as in the machine of Nymphodorus, to generate power for reducing dislocations.

Hippocrates does not in this passage refer to the use of the pulley, though in another place he mentions it in connection with the treatment of fracture of the spine, and we shall see several instances of its use for converting the direction of motion in machines for the reduction of dislocations.

In one of these, the machine of Fabrus, a system of pulleys is arranged to give a considerable increase of power, so that it is not unlikely that block and tackle arranged to multiply power would be used as well, although we have no direct description of such.

We may note that Scultetus (Tab. xxi) illustrates a block and tackle which he says that he has taken from Vitruvius, Lib. 10, ch x, and which he says was in use in his day for the reduction of dislocations.

As many of the surgeons were "*periodeutae*," traveling about from place to place, it was not possible for them to carry about the heavy contrivances that the practitioner settled in a large town could have at his command, but Hippocrates shows how to improvise imitations of these, and small winches which could be attached to such household implements as ladders were carried as part of the portable outfit.

The Scamnum, or Bench, of Hippocrates. This contrivance, of which the first account (Fig. 10) is given by the father of medicine, was used by all succeeding ancient surgeons, and Scultetus shows many figures of it in actual use in his time. Galen had a very high opinion of it. He says that all varieties of dislocation could be reduced by it.

Hippocrates says that "the best thing for any physician who practices in a populous city is to have prepared a proper wooden machine with all the mechanical powers applicable in cases of fractures and dislocations, both for making extension and for levering.

"For this purpose, it will be sufficient to possess a board resembling in length, breadth, and thickness, the quadrangular threshing boards made of oak.

"It should be six cubits, or a little more, in length, and about two cubits in breadth. A foot will be sufficient thickness for it.

"Along it from one end to the other an excavation (in the ground) must be made so that the working of the levers may not be higher than necessary.

"Then at both sides we are to raise short, strong, and firmly fixed posts carrying axles; and in the middle of the bench five or six long grooves are to be scooped out, about four inches distant from each other, three inches will be sufficient breadth and also depth for them, and although the number of grooves I have mentioned will be sufficient there is nothing to prevent their being made all over the bench.

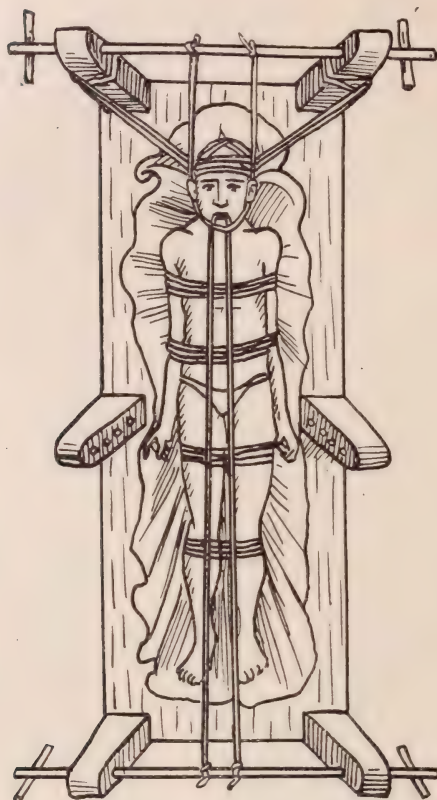


FIG. 16. The Scamnum in dislocation of the jaw. After Vidius.



FIG. 17. Counterextension by an axillary loop on the injured side and a perineal band on the other. Extension by a clove hitch above the knee. The surgeon's hands are seen levering the head of the bone inwards while the assistant props the left side of the body.

"And the bench should have in its centre a fairly deep hole of a square shape, and of about three inches in size, and into this hole, when judged necessary, is to be adjusted a corresponding piece of wood, rounded in its upper part, which at the proper time is to be adjusted between the perineum and the head of the thigh bone. This upright prevents the body from yielding to the force dragging downwards by the feet. For sometimes this piece of wood serves the same purpose as counterextension (i. e., by thongs) in an upward direction, and sometimes, too, when both extension and counterextension are made, this piece of wood, if susceptible of some motion to this side or that, will serve the purpose of a lever for pushing the head of the thigh bone outwards."

It is on this account that several grooves are scooped out in the bench.

The lever may be round or flat to suit different cases. Another mode of using the scamnum was to raise two posts at the middle of the sides, and to insert into them a transverse bar like the step of a ladder, to act as a horizontal perineal bar.

Figure 10 shows the machine constructed from this description by Litré.

A figure of the machine, by Vidius, is somewhat different, (Fig. 11) square holes taking the place of the longitudinal grooves described by Hippocrates.

I shall now proceed to give a few descriptions of actual applications of the machine to reduction of different dislocations, which, it is hoped, will be readily understood by the aid of the accompanying figures, which are mainly taken from drawings by Vidius in illustration of a chapter by Heliodorus. One cannot help thinking that this machine must originally have given the idea for the instrument of torture known as the rack. This was well known in the time of Cicero.

Celsus says that the scamnum was quite powerful enough to produce rupture of the muscles.

Fig. 12 shows the machine in use for dislocation forwards of the astragalus. Extension and counterextension are being made by thongs fastened below the knee and above the ankle.

Fig. 13 shows an attempt at reduction of the spine. Extension is being made below the seat of the lesion by a thong passed round the abdomen above the crest of the pelvis, while counterextension is maintained by a thong passed under the armpits.

The operator's assistant is levering down the gibbosity with a flat board used as a lever.

Fig. 14 shows the reduction of a dislocated elbow. The forearm is pulled down by a thong passed over its middle, while counterextension is maintained by thongs attached to the humerus and the forearm near the wrist.

Fig. 15 shows reduction of the humerus. While the extension and counterextension are made, the assistant pulls outwards the head of the humerus by a thong passed under the arm in the axilla.

Fig. 16 shows reduction of a dislocated jaw. Heliodorus is the only author who describes the use of a machine for this purpose, and it seems rather a superfluous display of force but it may occasionally have been necessary, as from what Hippocrates says it would seem that owing to the dearth of practitioners in some parts it was not uncommon to meet with cases which had remained unreduced for some time.

Of dislocation outwards at the hip (Fig. 17) Paulus Ægineta says:

"If the dislocation is outwards, the extension is to be made as above, but the thong at the perineum is to be passed by the opposite parts, the groin at the one side, the clavicle at the other. The surgeon is to propel the limb from without inwards, the lever being fixed in one of the furrows formerly prepared, and an assistant fixing the sound nates, that the body may not yield."

[TO BE CONTINUED.]

MEDICAL AND SURGICAL PROGRESS

FRACTURES.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

1. FRACTURE AND REFRACTURE OF THE PATELLA, WITH SOME POINTS IN THE TREATMENT.—Corner (*The Practitioner*, October, 1908).
2. FRACTURE OF THE METACARPAL BONES.—MacKenzie (*The Practitioner*, October, 1908).
3. FRACTURE THROUGH THE ANATOMICAL NECK OF THE HUMERUS, WITH DISLOCATION OF THE HEAD.—Buchanan (*Annals of Surgery*, May, 1908).
4. THE USE OF IMMEDIATE MASSAGE IN THE TREATMENT OF FRACTURES.—Guarnieri (*Arch. di Ortopedia*, 1907).
5. THE OPERATIVE TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR IN ADULTS.—Flint (*Annals of Surgery*, November, 1908).
6. THE CONSERVATIVE TREATMENT OF FRACTURES OF THE FEMUR.—Ashhurst and Newell (*Annals of Surgery*, November, 1908).
7. FRACTURE OF THE OS MAGNUM.—Harrigan (*Annals of Surgery*, December, 1908).
8. A NOTE ON THE NECESSITY FOR END-TO-END APPPOSITION IN FRACTURES OF LONG BONES.—Gray (*The Practitioner*, October, 1908).

Corner says that the patella is broken in two ways: by direct violence, as by a blow on the knee which breaks the patella against the anvil presented by the femur: and by indirect violence, when the knee is flexed, and the patella, being in the quadriceps femoris, the extensor arc over the joint is broken transversely across the condyles of the femur. From an etiological point of view, fractures by direct violence are without much interest. They are usually comminuted, sometimes T-shaped, rarely transverse or oblique. He reports 504 cases. Of these 10 per cent. showed comminution. Fractures due to indirect violence are interesting from several points of view. Considering them in regard to the situation of the fracture, it will be noted that when the fracture is transverse and is in the lower part of the bone, the upper fragment is the larger, when it is in the upper part of the bone, the lower fragment is the larger. When the fracture is about at the centre of the bone the fragments are approximately equal. He found in his series of cases that 40.2 per cent. were in the lower part of the bone, 43.3 per cent. were at its centre and 16.5 per cent. were in the upper part. He concludes that when the human patella is broken by indirect violence, the situation of the fracture will always, or practically always, be where the bone is in contact with the femur, and he found that 40.2 per cent. of the cases oc-

curred with slight flexion of the knee, 43.3 per cent. with semi-flexion of the knee and 16.5 per cent. with full flexion of the knee. Oblique fracture was found in but 4 per cent. of the cases. 73 per cent. were males and 27 per cent. females. More than two fragments resulted from the fracture in 10 per cent. of the cases. Four fragments were found three times, never more. The fracture was compound in less than 1 per cent. of the cases. In 55 per cent. it was on the right side, in 44 per cent. it was on the left and in 1 per cent. it was bilateral. In the 504 cases which he reports refractures occurred in 11 per cent. Of these 84 per cent. were males and 16 per cent. females, which shows a decided increase for refracture in the percentage of males and a decrease in that of females. Refracture occurred after suture of the bone in 52 cases, after other methods of treatment in 21 cases. 69 per cent. occurred within the first year and only 12 per cent. after three years had elapsed.

The author goes into a careful consideration of the methods of operation and comes to the following conclusions: That internal splints lead to absorption of the hard substances of the bone round them. This leads to the loosening of the internal splint, and therefore more easily to its breaking with a sudden effort; and to some separation of the fragments. With the early practice of massage and movements, the fragments are still further separated, and the union between them is fibrous, not bony. A perfectly good functional limb is obtained with such a fibrous union. Bony union is quite unnecessary to an excellent result. Limitation of movement, after the fracture, is caused by the adhesion, or cicatricial contraction of the attachments, of the patella to the femur, putting the quadriceps femoris at a mechanical disadvantage. The advantage of direct and internal splintage, suture of the fragments, lies in its allowing movements of the joint to be begun early, preventing any limitation to the movements of the patella on the femur. From the point of view of the subsequent value of the limb, it makes little or no difference whether the union between the fragments is fibrous or bony, provided that the patella moves freely on the femur. It is a matter of indifference as to the nature of the internal splint used; such as silver wire, copper wire, iron wire, or silk. An absorbable suture is not a good internal splint, because its presence will be required for some weeks at least. A wire is always loosened, even if bony union takes place between the fragments. It is not clear that it is better to use two wires than one. Treatment after operation must be directed to getting a movable knee joint, and a patella freely movable on the femur. For success, the operation area must not suppurate. If operation is to be undertaken, it should be done as soon after the accident as is convenient, and before any reparative inflammation has stiffened the torn structures and increased the difficulty in bringing the fragments together and in moving the joint afterwards. Union by first intention can then be obtained between the fragments.

Previous to the surgical use of the x-ray little was known and very little recorded of fractures of the metacarpal bones. It has since been discovered, however, that these fractures are much more common than was previously believed, and leads us to consider that many of the cases that were diagnosed as contusions and dislocations were in reality fractures. The cause of this fracture is usually direct violence, of late indirect violence has been recognized as an important factor, such as has been received when a blow is delivered with a clinched fist, the force being brought to bear in the longitudinal axis of the bone. The diagnosis is difficult without the use of the x-ray as crepitus can rarely be

made out, also unnatural mobility. Displacement, however, can at times be easily recognized; there is usually ecchymosis and swelling. The author gives the following recommendation for obtaining crepitus: "Grasp the finger corresponding to the fractured metacarpal with the whole right hand, steadying the injured metacarpal with the left hand, and make steady and continuous traction." This is an excellent method for reducing displacement. If seen early and properly treated, the prognosis as to the usefulness of the hand and deformity is very favorable, if left alone or badly treated, the prognosis is very bad, the tendons becoming adherent and glued down to a mass of callus and the resultant hand has become nothing better than a claw.

Gray says that statistical inquiry into a large series of cases would succeed in refuting the statement that an end-to-end apposition is not necessary to the perfect function of a limb after fracture, and that the patient should be informed of this; further, that disability is often due to injury to the soft parts and cannot be even remotely affected by the closest and most perfect apposition. For the following reasons he believes that it is absolutely necessary to have an end-to-end apposition if a perfect limb is required: "As regards repair at the site of the injury: It is fair, I think, to compare the healing of wounds of soft parts with the repair of fractured bones, for physiological and pathological processes in hard and soft parts do not differ in any essential details. The healing of wounds by granulation is comparable with repair of separated fragments by callus; while primary union is desirable in both for similar reasons. In soft parts: (a) Primary union is quicker and the resulting scar firmer; 'weak scars' result from healing by granulation. (b) Diseases of cicatrices arise almost exclusively in scars, the result of union by second intention. (c) 'Painful scar' is practically non-existent after primary union."

Buchanan believes that fractures through the anatomical neck of the humerus, associated with dislocations of the head, occupy a position by themselves as regards their mechanism of production and pathology, the nature of their operative treatment and the nature of their external treatment. Often the ordinary signs of dislocation are not present. He speaks of a case where the elbow could be applied to the chest wall and the hand placed on the opposite shoulder, the tuberosities could be felt to rotate with the shaft of the humerus under the acromion. In this case x-ray examination showed a fracture of the anatomical neck with subglenoid dislocation of the head. Here the head was removed with difficulty for the relief of persistent pain and helplessness of the limb. He reports three cases where reduction was done by open incision, giving one good result, one fair result and one result not sufficiently well established by the passage of time. He believes excision of the dislocated head to be the operation of choice. This he has done in 14 cases with two good results, six fair results, one poor result and two deaths to its credit. For fractures in the neighborhood of the epiphysis, such as Colle's fracture, intramalleolar and supramalleolar fractures, fractures at the elbow and shoulder, Guarniere recommends massage and active and passive movements. He believes that early treatment along these lines, done by the surgeon himself, not by a nurse, will give much quicker and better results. Also this is true of diaphysis fractures, where there is not much tendency to displacement. He advises that patients with upper extremity fractures be allowed up and about soon after the injury, and lower extremity fractures on the 30th day. Provisional splints only should be used, and they should be removed at each massage and

manipulation. One or two hours a day should be given to the treatment, which should be supplemented with hot baths and prudent use of electricity. Skill and discernment are necessary, but in his view it is the best and most efficient method for securing quick return of function and good union. It should be started immediately and gradually increased during recovery.

In the articles of Flint and Ashhurst and Newell, we have a rather thorough review of all the points which tend toward operative treatment of the fracture of the femoral neck as well as those which tend against it. Flint believes that the best result obtainable from conservative treatment is to secure ankylosis and that this will be associated with shortening and lameness which require compensations in the way of tilting of the pelvic and lumbar spine. Conservative treatment as well as operative treatment by pegging has the undesirable result at times of allowing the femur to be displaced upwards. Flint believes that the best results are obtained by excision of the head. Ashhurst and Newell give a report of 121 cases treated by conservative methods, such as the Buck's longitudinal extension methods, with or without sand bags, Smith's anterior splint, double incline plane and Volkmann's sliding splint. They believe that, with the exception of four patients, the results of conservative treatment were satisfactory. They are not in favor of operative treatment where it is possible to have 90 per cent. of success by conservative methods.

Harrigan points out the fact that fractures of the os magnum are more common than is generally supposed, and that they have hitherto been frequently neglected and called sprains of the wrist. This he verifies by *x-ray* diagnosis. These fractures may be caused by direct or indirect violence; their most characteristic symptom is a localized point of tenderness at the neck of the bone. In all severe sprains of the wrist the patient should be subjected to *x-ray* examination.

GASTRIC SECRETION IN INFANCY.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

1. CONCERNING THE PRESENCE OF PEPSIN IN THE STOMACH OF THE NURSING, ETC.—Reeve-Ramsey (*Jahrbuch f. Kinderheilk.*, August, 1908).
2. EXAMINATIONS AND STUDIES OF THE FUNCTION OF THE STOMACH IN THE NURSING.—Allaria (*Riv. di Clin. Pediatr.*, July, 1908).
3. CONCERNING THE RELATION OF LAB TO PEPSIN IN THE STOMACH OF THE CHILD.—Wohlgemuth und Roder (*Biochem. Zeitschr.*, Bd. 2 Heft 4-6).
4. GASTRIC FUNCTION IN CERTAIN NUTRITIONAL DISTURBANCES OF THE NURSING.—Miller and Wilcox (*Lancet*, 1907, 2, p. 1670).
5. EXAMINATIONS OF THE PEPSIN SECRETION IN NORMAL AND SICK NURSINGS.—Rosenstern (*Berl. Klin.*, March, 1908, No. II).

As the result of a series of careful experimental studies on the gastric juice of healthy and abnormal infants, Reeve-Ramsey reaches the following conclusions: (A) Pepsin is always found in the stomach of normal breast-fed children. (B) In acute gastrointestinal disturbances in nurslings, pepsin is usually present in the stomach. (C) In infants suffering from pylorospasm, pepsin and hydrochloric acid may be present in greater amounts than in normal children of corresponding age. (D) The stomach of children suffering from chronic atrophy frequently contains no pepsin, though it is noteworthy that if these atrophic children begin to improve and gain in weight, pepsin can again be demonstrated in the stomach. (E) The gastric juice of normal healthy children is able to transform proteid into peptone, and this is possible without the addition of any acids other than those invariably found in the stomach. (F) The pepsin in the gastric juice is able to do active digestion if lactic acid is present without hydrochloric acid. (G) In some cases hydrochloric and lactic acids are found even though no pepsin be present, and *per contra*, pepsin can be present in the gastric juice without the presence of either hydrochloric or lactic acid.

Miller and Wilcox examined a series of cases of nutritional disturbance in infancy with special reference to gastric secretion and function. In cases of simple atrophy they found diminished secretion of hydrochloric acid and lab ferment, without disturbance of motility or secretion of excessive quantities of mucus.

In certain cases of what these authors call acid dyspepsia (which, from the symptomatology, would appear to belong in the category ordinarily referred to as pylorospasm) the gastric secretion showed increased acidity and diminished motor power (stomach emptied itself very slowly). On the other hand these cases showed no increase in mucus secretion and no increase in the activity of the lab ferment. [The find as to the lack of mucus secretion in these cases is at variance with the generally accepted views on this subject. Many of the symptoms of pylorospasm

have been shown to be due to the existing gastritis with the production of excessive quantities of mucus.—Ed.]

In cases of true hypertrophic stenosis, the authors found most often, a distinct increase in the fermentative powers of the gastric juice (lab ferment) with, in addition, great increase in mucus secretion and stasis of the stomach contents. The total acidity is usually below normal and is partially influenced by the coexisting gastritis. These conditions change as the result of therapeutic lavage. In a critique of the work of these authors, Ibrahim calls attention to the fact, abundantly supported by the testimony of other observers, that in cases of true hypertrophic pyloric stenosis hyperacidity is very often found.

Allaria, as the results of his experimental and clinical studies, finds that the stomach of the nursing shows various anatomic and functional peculiarities which render its functioning powers deficient as compared with the powers of the adult stomach. He calls especial attention to the very low acidity even in normal infants, the insufficient digestive power of the pepsin in the infantile stomach, the weak antiseptic powers of the gastric juice in infancy, the lack of an osmo regulating force of the stomach, in consequence of which there is a lack of gastric isotone.

Discussing the relation of the lab ferment to the pepsin in the stomach of the nursing, Wohlgemuth and Röder say that while the reaction of the lab ferment to chemical reagents and various gradations of temperature, as well as its presence during the first days of life have all been established, we are still in darkness as to the relations of lab to pepsin. As the results of the studies of the authors on stomachs of children of various ages, it would appear that there could be no possibility of preponderance of activity of the lab ferment as compared with peptic activity. Wherever there is strong peptic activity, there we find the lab ferment very active also, and *vice versa*. These two functions would therefore appear to be correlate in the nursing.

With reference to the secretion of pepsin in infancy, Rosenstern's recent studies are of especial interest. As a test meal, the author employed tea sweetened with saccharin, finding this preferable to milk. Quantitative determinations were made by the method of Jacobi, which method is dependent upon the fact that an emulsion of ricin and hydrochloric acid is made clear by the addition of pepsin. The author summarizes his results as follows: The pepsin secretion of the healthy artificially fed infant increases with age up to three months, when it reaches a point at which it remains constant. Breast-fed infants secrete less pepsin than artificially fed babies at corresponding ages. The quantity of pepsin secreted by the stomach does *not* vary according to the state of nutrition, but is more or less constant for the age of the infant. Thus older children who are under weight, secrete pepsin in correspondence with their age and not their weight. Digestive disturbances acute or chronic do not diminish the quantity of pepsin. But when the food taken in decomposes in the stomach, the quantity of pepsin is smaller than normal. In infantile atrophy (the stage of decomposition in Finklestein's classification of alimentary intoxication) there is thus a marked diminution in the quantity of pepsin secreted. The author, as the result of his studies, does not believe that the diminution of ferment in the stomachs of infants leads to definite symptoms or plays an etiological role in the digestion of infants.

CARDIOSPASM.

A REVIEW OF RECENT LITERATURE.

By JESSE S. MYER, M. D.

1. CONTRIBUTION TO THE STUDY OF THE MUSCULAR CARDIAC CLOSURE.—Sinnhüber (*Zeitschrift f. klin. Med.*, 1903, Vol. 50. Part 1 and 2).
2. PATHOLOGY AND THERAPY OF CARDIOSPASM.—VON Mikulicz (*Deutsche med. Wochenschrift*, 1908, Vol. 30, No. 1 and 2).
3. DILATATION OF THE OESOPHAGUS WITHOUT ANATOMICAL STENOSIS; SO-CALLED IDIOPATHIC.—ROSENHEIM (*Berliner klin. Wochenschrift*, 1902, No. 11-12-13).
4. CARDIOSPASM.—PLUMMER (*Jour. A. M. A.*, 1908, Vol. 2, No. 7).

Until comparatively a few years ago cardiospasm with dilatation of the oesophagus was comparatively unknown. As in many other instances, however, as soon as the attention of physicians was directed to the existence of such a condition the literature on the subject rapidly multiplied. Just as, for instance, congenital stenosis of the pylorus was not recognized until a short time ago, and now the number of cases reported in the literature may be counted by hundreds.

In 1900 Neumann was able to collect seventy cases. In 1904 Mikulicz estimated that about 100 cases had been reported in the literature. Gottstein, together with his own cases, succeeded in collecting 140. Plummer recently added to this number 40 cases which came under his own observation, and so the literature grows. Perhaps no factor in diseases of the oesophagus has so stimulated the study of both the physiology and pathology of the oesophagus as has cardiospasm. Among those who have advanced our knowledge of both the physiology and pathology may be mentioned such names as Meltzer, v. Mikulicz, Sinnhüber, Rumpel, Rosenheim, Strauss, Kraus and others.

Sinnhüber investigated especially the question as to the normal state of the cardia, namely, as to whether it is normally open, whether its walls lie loosely upon one another, or whether it is closed by muscle contraction. At this time, 1903, he states that little more was known on this point than was known 100 years ago. Up to the beginning of the last century the general impression was that it was closed. Magendie and Johannis Mueller in 1825 and 1837 made the observation that the lower third of the oesophagus underwent alternate contractions and relaxations, due to peristaltic waves and that there were moments when the cardia was entirely relaxed, though these periods were very short. Schiff studied the cardia through windows made in the stomach of animals and was unable to demonstrate this independent action on the part of the lower third of the oesophagus, but did find that these movements held good for the cardia. As early as 1881 and 1884, he and Meltzer had found that cutting the vagus in the neck or below the diaphragm did not lead to paralysis, but to irregular contractions of the cardia, afterwards followed by spasmodic contractions lasting for a considerable length of time, occasionally followed by relaxation. Kraus later demon-

strated, clinically, in a man with a spindle-shaped dilatation of the oesophagus that both vagi were diseased. Sinnhüßer also conducted a series of observations on a sword swallower, oesophagoscopy examinations of dogs, observations of the cardia through the stomach after double-sided vagotomy both above the diaphragm and in the cervical region and the examination of ruminants. He came to the conclusion that the cardia is in a state of tonic contraction, reinforced by the circular muscles of the diaphragm surrounding and the oblique insertion of the oesophagus into the stomach. He thinks that the closure of the cardia is the result of two opposing forces, a contraction and relaxation. The contraction has its origin in the cardia itself, while the relaxation has its origin in the central nervous system, the impulses being transmitted by the vagus. If the vagus is cut above the diaphragm a relaxation of the cardia follows; if cut high up in the cervical region the tonicity of the cardia is temporarily increased.

v. Mikulicz in 1904 stated that Ziemssen, as far back as 1873, collected 17 cases of idiopathic dilatation of the oesophagus and that at this time over 100 cases could be collected from the literature. To Lichtenstein, Strümpell, Meltzer and Rumpel he gives credit for the first important knowledge on the subject. Mikulicz here devotes himself chiefly to the pathology and therapy. It is easily differentiated from carcinoma, old scars of the oesophagus, etc., and is characterized by a dilatation of the lower two-thirds of the oesophagus which may take on immense proportions, even up to containing one liter. The dilatation is usually pear-shaped, the upper portion usually being the younger portion. The condition is also characterized by "kardiale dysphagie" and oesophagitis, due to the constant irritation. It is this that causes many of the unpleasant symptoms. von Mikulicz recognized at that time five theories as to the origin of this so-called idiopathic dilatation. (1) Primary cardiospasm (Mikulicz and Meltzer), (2) primary atony of the oesophagus musculature (Rosenheim), (3) the simultaneous spasm of the cardia and paralysis of the circular muscles due to vagus paralysis (Strauss), (+) congenital tendency (Fleiner), (5) primary oesophagitis (Martin).

As early as 1882 von Mikulicz considered the primary cardiospasm the chief etiological factor and even at this time, 1904, he saw no reason for a change of belief, adding, however, that there were concomitant factors and based his beliefs upon physiological observations. The oesophagus within the thorax is a long, open tube containing air. There is a negative pressure on inspiration, varying from 9 mm. to 20 mm. of water, depending upon the degree of inspiration. On expiration, on the other hand, there is a positive pressure, which, upon coughing, etc., may be greatly increased. The cardia is normally closed through the normal tone of the circular muscles and a valve arrangement. The negative pressure in the oesophagus and positive pressure in the stomach keep this valve closed. When the positive pressure in the oesophagus overcomes that in the stomach the valve is opened. Fluids need only be started downward in the oesophagus and through their own weight are sufficient to open the cardia. When cardiospasm occurs there is first a hypertrophy in an effort to overcome the spasm and then a dilatation. In the first stage the difficulty is greatest upon attempting to swallow liquids, while solid masses are easily carried through; in the second stage solid masses cannot be carried through while liquids may be. It is interesting to note that the possibility of forcible dilatation occurred to Mikulicz but he hesitated to employ a method which might result in

the tearing of tissues. He reports several cases in which he did a forcible dilatation through a gastrostomy opening with satisfactory results.

Rosenheim presents a very interesting review of the entire subject with a report of cases under the title of "Dilatation of the Oesophagus Without Anatomical Stenosis, So-Called Idiopathic." He attributes the condition primarily to an atony of the muscles of the oesophagus, resulting in a dilatation, and also the occurrence of a cardiospasm, in other words to a double disturbance of innervation. He calls attention to the fact that the condition may be long interpreted as a gastric disturbance before the dysphagia attracts attention to the oesophagus as a cause. In arriving at a diagnosis, the sound or stomach tube reveals the most important points. The obstruction with which it meets, the removal of contents of a neutral or slightly acid reaction, at once attract attention to the existence of a dilatation of the oesophagus. The oesophagoscope also aids in the diagnosis. It reveals the presence of a sac and an inflammatory condition of that sac. He also enters into the question of the differential diagnosis between dilatation of the oesophagus, diverticulum, etc., and enters into a discussion of the treatment of the condition through a stretching of the spasm by means of a rubber balloon at the end of a sound. Rosenheim was one of the first to use this method and to him and Strauss belongs much of the credit for substituting this comparatively simple and harmless method for that of surgical interference.

Sippey and Plummer in this country have worked along the same lines as Strauss and Rosenheim in the treatment of cardiospasm. The latter presents a report of some forty cases in which very satisfactory results were obtained. He reviews carefully the literature on the subject as to the etiology, symptomatology, treatment, etc., recognizes three stages in the development of cardiospasm; first, in which the peristaltic contraction of the oesophagus is sufficient to force the food through the spastic cardia, characterized clinically by discomfort, pain, choking sensations; etc. Second, in which the peristaltic force of the oesophagus muscles is no longer able to overcome the resistance of the contracted cardia and the food is immediately regurgitated; third, in which the oesophagus begins to give way and the dilatation is rapid. This stage is characterized by the retention of food which is regurgitated at irregular intervals. The symptom complex is almost pathognomonic and may also be divided into three stages, first, cardiospasm without food regurgitation; second, cardiospasm with immediate food regurgitation; third, cardiospasm with dilated oesophagus, the retention of food and its regurgitation at irregular intervals. Of the cases reported seven were observed during the second stage and thirty-three during the third stage. The method of treatment employed by the author does not differ materially from that recommended by Strauss, Rosenheim and others, consisting in the forcible dilatation of the cardiospasm with rubber balloons. The author, however, has an original method of employing it together with a manometer to determine the degree of pressure used. The results reported by him are highly satisfactory.

(The writer has employed this method not only in the treatment of cardiospasm, but in other benign obstructions of the oesophagus as well with great satisfaction. He finds, however, any complicated manometer connections entirely unnecessary, employing a large glass syringe such as is used in bladder irrigations, measuring carefully each time the amount of water used in obtaining the pressure and relying in a great measure, as must always be done, upon the patient's sensations for the degree of pressure used.)

INTESTINAL FERMENTATIVE INDIGESTION.

A REVIEW OF RECENT LITERATURE.

By ALBERT E. TAUSSIG, M. D.

1. INTESTINAL FERMENTATION AND THE USE OF TEST DIETS IN THE INVESTIGATION OF INTESTINAL FUNCTIONS.—Schmidt (*Deutsch. Arch. f. klin. Med.*, 1908, Vol. 92, Nos. 5 and 6).
2. THE FUNCTIONAL EXAMINATION OF THE INTESTINE BY MEANS OF A TEST DIET. 2nd Edition, 1908.—Schmidt.
3. ON INTESTINAL FERMENTATIVE DYSPEPSIA.—Meyer (*Deutsch. Arch. f. klin. Med.*, 1908, Vol. 92, Nos. 5 and 6).
4. A NEW FERMENTATION TUBE FOR THE DETERMINATION OF FÆCAL FERMENTATION, ETC.—Muenzer (*Arch. f. Verdauungs Kr.*, 1908, No. 1).
5. SAHLI'S DESMOID REACTION, SCHMIDT'S TEST DIET AND EXAMINATION OF GASTRIC CONTENTS.—Tottmann (*Muench. med. Wochenschr.*, 1907, No. 52).
6. THE COMMON BACTERIAL INFECTIONS OF THE DIGESTIVE TRACT, ETC., 1907.—Herter.

Some seven years ago the proctologic studies of Schmidt and Strassburger called attention to a variety of intestinal disturbance so constantly associated with specific changes in the stool as to warrant setting it up as a definite disease. Nevertheless the concept of Intestinal Fermentative Dyspepsia, as it was called, did not receive general recognition until the recent work of Schmidt, Meyer and Herter again called attention to it. Subjectively it is characterized by very definite complaints on the part of the patients. These consist in rather severe abdominal pain, usually localized about the navel, intestinal rumbling, more or less meteorism, while the bowels may be either loose or constipated or indeed constipation may alternate with diarrhoea. Gastric disturbances are not constantly present; vomiting rarely occurs while nausea and anorexia are more frequent. A history of stomach trouble preceding the intestinal affection may usually be obtained. Constitutional disturbances are usually limited to a feeling of languor, general malaise, dizziness and loss of weight. It is an extremely chronic affection, remissions alternating with periods of comparative well-being, but acute exacerbations are rather unusual.

In children the clinical picture is somewhat different. Herter gives a vivid description of it in his great work on Bacterial Infections of the Digestive Tract and groups it with what he calls The Indolic Type of Excessive Intestinal Putrefaction. It may be characterized as the marantic, large-belly type of chronic intestinal indigestion in children. This condition has long been known to clinicians as an extremely obstinate form of digestive derangement, manifesting itself in a distinct retardation of growth (usually without much mental retardation), in distension of the abdomen by gas, flatulence, intolerance of carbohydrates and voluminous, light-colored, usually gray and fatty stools containing much gas. In many of these children there is excessive sweating of the

head. Another characteristic feature is the readiness with which fatigue comes on. A child of six or eight years of age will show fatigue after a very short walk and will manifest a want of interest in exercise and play. If the trouble comes on during infancy there may be considerable delay in the ability of the child to stand or walk without support, and a child of six years or over may be unable to go upstairs except by a kind of creeping motion. Mentality may be normal and one is not infrequently struck by the contrast between the sharp wits of these children and their physical retardation.

In adults there is usually no impairment of strength except where the indigestion has developed out of a previous anemia or a functional neurosis. A physical examination reveals nothing very definite. The tongue is often coated but fetor ex ore is rare. The abdomen is more or less distended and diffusely tender on palpation, especially about the navel or just to its left. The epigastrium is usually not tender to pressure. The examination of the gastric contents gives no constant results though subacidity is not unusual. The urine usually contains much indican, especially in children, and the ethereal sulphates are greatly increased in quantity.

It is the stools however that show the most characteristic changes. Their consistency is usually mushy, of a yellowish color and strongly acid. They are foamy, full of gas-bubbles and smell strongly of butyric acid. Unchanged bile pigment is sometimes present, more frequently large amounts of hydrobilirubin. For a definite diagnosis, however, it is essential that the stool be examined while the patient is on a Schmidt test diet. Formerly Schmidt insisted upon a rigid dietary in which all the constituents were carefully doled out by weight and which remained unchanged day after day. This had the disadvantage of being practicable only in a well regulated hospital. It was often felt to be unpalatable, especially to Anglo-Saxon patients, and occasionally led to refusal of food on account of complete anorexia. In his last publication, however, he states that he obtains equally good results with a more elastic dietary of which the only indispensable constituents are:

1. A sufficient quantity of milk (one to three pints) which may, if desired, be used in the preparation of other foods.
2. About 100 g. wheat bread (rolls, toast, crackers, etc).
3. A goodly portion of mashed potato.
4. A quarter of a pound of hashed beef of which at least a portion must be eaten raw or nearly so.

A sample dietary based upon the above would be as follows:

Breakfast:—A pint of milk, tea or cocoa (the latter two, if possible, served with a good deal of milk), one roll (or a corresponding amount of white-bread, toast or cracker), butter and one soft boiled egg.

During the forenoon:—A dish of strained oat-meal gruel with milk or flour-soup or porridge (salt and sugar ad libitum).

Dinner:— $\frac{1}{4}$ lb. well chopped, lean beef with butter and salt, broiled so that the interior remains raw; a portion, not too small, of mashed potato, smooth and free from lumps.

During the afternoon:—The same as for breakfast but without the egg.

Supper:—A pint of milk (or a plate of soup such as was given during the forenoon), a roll with butter and one or two eggs, soft-boiled or scrambled.

These five meals may be shifted about at the convenience of the patient and they may be sometimes made more palatable by conceding a

little wine, a little weak coffee, beef-tea at noon, and a little finely hashed roast veal for supper. Other changes are permissible provided the four essential ingredients mentioned above are retained and nothing is added that might affect the stool.

Such a diet, if rather monotonous is reasonably palatable and sufficiently nutritious. It sets the various ferments of the digestive tract a definite task to perform and from the result of their activity as seen in the stool, a fairly accurate notion of their functional activity can be obtained. In typical cases of intestinal fermentative indigestion, the resulting stool shows very constant abnormalities. Macroscopically it is of a mushy consistency, yellow in color and acid in reaction. It usually contains gas bubbles and may be foamy, though this is not always the case. Microscopically, there is no great amount of connective tissue if the gastric juice is adequate and the muscle fibres as well as the fat are well digested if the pancreas functionates normally. There will however be found many potato cells which usually contain unaltered starch, as shown by the iodine test; the latter however will fail if, as is sometimes the case, the starch has been nearly or entirely dextrinized. A more certain test of the failure completely to digest the starch, characteristic of this disease, is available if Schmidt's fermentation apparatus is used. This consists of a small wide-mouthed bottle with a perforated stopper through which a glass tube leads into an inverted test-tube filled with water. This test-tube is again connected with a second empty tube into which the water from the first one may escape if displaced by gas. The stool, rubbed up with a little water, is placed in the bottle, the apparatus is connected and placed in an incubator. A plentiful evolution of gas, within twelve hours, is significant of this type of indigestion. Normal stools often produce a little gas and proteid decomposition may cause a plentiful gas formation after twenty-four hours or longer, but a stool that will produce sufficient gas to displace one-third or one-half of the water in the first tube, within twelve hours, is extremely significant as to the presence of the intestinal affection under discussion. This will especially be the case if the stool itself has meanwhile become paler in color, intensely acid in reaction and has developed a marked odor of butyric acid.

As regards the pathology of this disease, there is every reason to conclude that it consists in a diminished functional activity of the tubular glands of the small intestine. While gastric digestion is often impaired, as shown by an examination of the stomach contents and by the presence of connective tissue in the stool, this complication is by no means constantly present and typical cases of intestinal fermentative indigestion may show evidence of perfect gastric digestion. Liver and pancreas too usually functionate normally. That the affection has no connection with an intestinal catarrh is shown by the absence of mucus in the stool and of the excessive putrefaction which is so constantly present in catarrhal conditions of the small intestine. Apparently only one case of intestinal fermentative indigestion has come to autopsy, that reported by Schmidt, in which the stomach, liver and pancreas were normal and the intestinal contents contained little more than normal quantities of mucus. By exclusion we are forced to lay the diseased condition at the door of the intestinal glands.

The treatment consists essentially in the withdrawal of carbohydrates from the dietary. Schmidt's test diet contains relatively small amounts of starch and in mild cases a distinct improvement may be noted while the patient is under observation on this diet. In severer cases, the

starches must be entirely withdrawn and the patient put to bed. Warm applications to the abdomen are of service and, where there is gastric disturbance, this must be treated, large doses of HCl being given in anacidity and belladonna preparations in hyperacidity. Gastric lavage is sometimes useful and abdominal massage may add to the patient's comfort. Laxatives are rarely needed.

Under this regimen, improvement is usually prompt, especially in adults. All the disturbances, subjective and objective, may disappear in a few days or weeks. Moreover it often happens that, little by little, the power to digest starches returns. The limit of tolerance of starches is sharply defined and may be estimated by systematic stool examinations just as by urine analyses in diabetes. The dextrinized flour preparations (crackers, toast, etc.) are usually borne best. Somewhat later, the patients are able to take white bread, farina and rice. Last of all comes the ability to digest potatoes, mashed or in puree-form. Potatoes otherwise prepared are hardly ever tolerated.

In children, according to Herter, the prognosis is much less constantly favorable. The treatment in general is the same. Starches should be permitted in only very small amount and chiefly in the form of well-cooked rice or hominy or breakfast biscuits. It may be advantageous for a time to peptonize the milk in order to secure early absorption. All meat should be given in a finely divided form. It sometimes seems best, in children as old as five or six years of age, to allow only two meals in the course of the day, these being rather generous. A great deal of rest is necessary for these children and they should not be permitted to play or walk to the point of fatigue. Patients of the class under consideration often do badly in cold weather, probably because they cannot afford the caloric loss to which they are then subjected. Where this is the case a period of residence in a mild winter climate is helpful. Improvement is sometimes so slow that every one concerned with the case may become discouraged, but it is certain that a high degree of improvement can occur even after several years of extremely slow progress. In order to secure this improvement, however, it is impossible to make concessions in regard to diet, and the policy of largely excluding carbohydrates must be enforced. It cannot be denied that even in those cases in which the best results are obtained there is commonly a retardation in growth which is still manifest at the time of puberty. Moreover, there is no doubt that persons who have suffered from this affection during the period of childhood become especially susceptible to intestinal disorders during later years and seldom attain robust health.

DIAGNOSTIC AND THERAPEUTIC NOTES.

COLLES' AND PROFETA'S LAWS IN THE LIGHT OF MODERN SERUM RESEARCH.—J. Bauer (*Wien. Klin. Wochenschr.*, 1908, No. 36), examined 201 newly-born babies with Wassermann's reaction, the reaction being positive in 22 cases. All the children with symptoms of lues and those that were suspected, showed a positive reaction, as did the mothers of these children. Bauer further examined the blood of the foetal and of the maternal placenta. In four cases a positive reaction was found in foetal and maternal blood. In only two cases a positive reaction of the maternal blood could be demonstrated. He concluded from these examinations, that the mothers of hereditary luetic children suffer *always* from syphilis and that healthy children from luetic mothers are free from latent lues. These latter children never showed a positive reaction. These facts show that the laws of Colles and Profeta are not true.

ATROPIN TREATMENT IN ULCUS VENTRICULI.—Certain cases of ulcer ventriculi, complicated with hypersecretion and muscular insufficiency are not curable by diet or even operation. D. von Tabora (*Muench. med. Wochenschr.*, 1908, No. 38) obtained good results in these cases during several years by administering atropin internally. The atropin acts as an antispasmodic and narcotic and diminishes the secretion. He gives one milligram morning and evening hypodermically, sometimes three milligrams daily, for 4 to 10 weeks. He starts his treatment with fasting for a few days and follows with the diet of von Leube, while the patient keeps perfect rest. The treatment never failed entirely. The hypersecretion ceases, the acidity diminishes, the insufficiency and spasmodic pylorus contractions disappear. Patients stood the treatment well, suffered only from a dry throat and accommodation paralysis.

STOMACH SYMPTOMS IN MASTURBATION.—Stomach symptoms due to masturbation do not always cease when the patient has conquered his bad habits. In these cases A. Siegmund (*Muench. med. Wochenschrift*, 1908, No. 31) treats the anterior part of the left middle concha (stomach-pain point of Fliess). This point is found in these cases, especially during an attack of pain, to be very sensitive to the touch, swollen and readily bleeds. Touching this point with a 20 per cent. solution of cocain, eventually with adrenalin, stops the pain soon. In severe cases, etching with trichloroacetic acid crystals or resection of the anterior part of the concha, causes the pain and hyperacidity to disappear permanently.

If the patient starts to masturbate again, a recurrence of the changes in the pain-point will be noticed. Other symptoms—results of masturbation—will disappear also under this treatment of the concha.

CORRESPONDENCE.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

The idea of the existence of glands unprovided with excretory canals and which pour their products of secretion directly into the general circulation, is one of those problems that has greatly modified our knowledge of physiology, pathology and therapeutics in the last few years. The discovery of the action of the thyroid body on the nutrition; the study of nutritive alterations in their relation to certain diseases, have been the point of departure of an incalculable number of works for which the clinic and the laboratory have furnished the material. And before long the physiological and pathological rôle of the parathyroid glands, of the thymus, of the hypophysis cerebri, of the suprarenal glands and the genital glands, will be mastered. Each of these glands has a distinct and precise physiological action in the summing up of the nutritive and functional equilibrium of the organism. But the particular function of each gland and of each sort of internal secretion, presupposes that the other glands react normally on it; and that the normal function of the thyroid body, for instance, is possible only when the other glands, which secrete internally, are themselves normal. Nevertheless, in practice it is relatively easy to recognize the particular signs of bad function in a determined gland. These signs are in effect sufficiently characteristic; they dominate the whole clinical picture to so great an extent that one can attribute to the syndrome, a real entity. The indications of an initial glandular disturbance appear in other glands as secondary troubles, which are not difficult to localize. But the problem becomes greatly complicated when two glandular chains present concomitant alterations. A recent work of M. Laiguel-Lavastine very well shows, at one and the same time, the absorbing interest and the difficulties of this phase in the study. The correlation of the internal secretory glands and their pluriglandular syndromes open up illimitable horizons to the internist and the therapist. It would appear that out of the study of this matter there should issue ideas of a more precise nature, in regard to what is now vaguely called individual temperament and constitution. It is impossible to give, in a short space, even a short sketch of the deep interest which attaches to the subject of the interglandular relations. The chapter of the glandular relations of the thyroid to the parathyroid bodies, the thymus, the hypophysis cerebri, the suprarenal capsules, the ovaries, the testicles and the prostate, has been the one that is of the greatest importance in recent works, and suffices to show that there are more or less direct correlations between the different ductless glands. These correlations attain their maximum of evidence in the pluriglandular syndromes, where the symptoms of an insufficiency of one gland are associated with the signs of an insufficiency or hyperactivity of one or many other ductless glands.

At the present time it is possible to outline a clinical picture of pluriglandular syndromes, such as a thyroidean predominance, a hypo-

physitic predominance and a genital predominance; but there are other pluriglandular syndromes which are not predominant, and for these, future investigations will no doubt throw further light on matters now obscure. A study of these facts shows that there exist between different ductless glands, correlations which manifest themselves, in the course of certain pathological conditions, by functional substitutions producing complex syndromes. Intoxications and infections are the habitual causes of glandular changes; nevertheless it is good logic to admit that in the cases where but one gland evidences signs of a lesion, the other glands may show, in their turn, secondary lesions, without these being necessarily due to an intoxication or an infection of the organism. A characteristic example of elective reaction that one altered gland may have on another is seen in the hypertrophy of the hypophysis cerebri following castration.

The ductless glands concur in maintaining an equilibrium of the different organic functions by diverting into the system the chemical agents, as yet unknown for the most part, but to which Starling has given the name of *vital principles*. Their clinical action is simple, for it is evident that these substances act neither in the fashion of a toxin nor in the fashion of an alimentary substance. As Brown-Sequard and d'Arsonval have said, the different cells in the human economy act conjointly, and through a mechanism other than the nervous system.

From a clinical standpoint where a glandular trouble is the only one, it is accompanied by other glandular disturbances which are not marked enough to manifest themselves as symptoms. If in these comparatively simple cases, there is already a difficult matter to contend with, one can readily understand how much more complex the problem becomes as regards pluriglandular syndromes when divers symptoms are but slightly manifest. The therapy of these pathological states is not less difficult than the diagnosis. In case the pluriglandular syndrome is dominated by a group of glandular symptoms, polyglandular opotherapy seems to give satisfactory results; but, it should not be forgotten, that in this treatment empiricism plays quite a part.

December 10th.

OBITER DICTA FROM FOREIGN JOURNALS.

A QUESTION OF DIET.

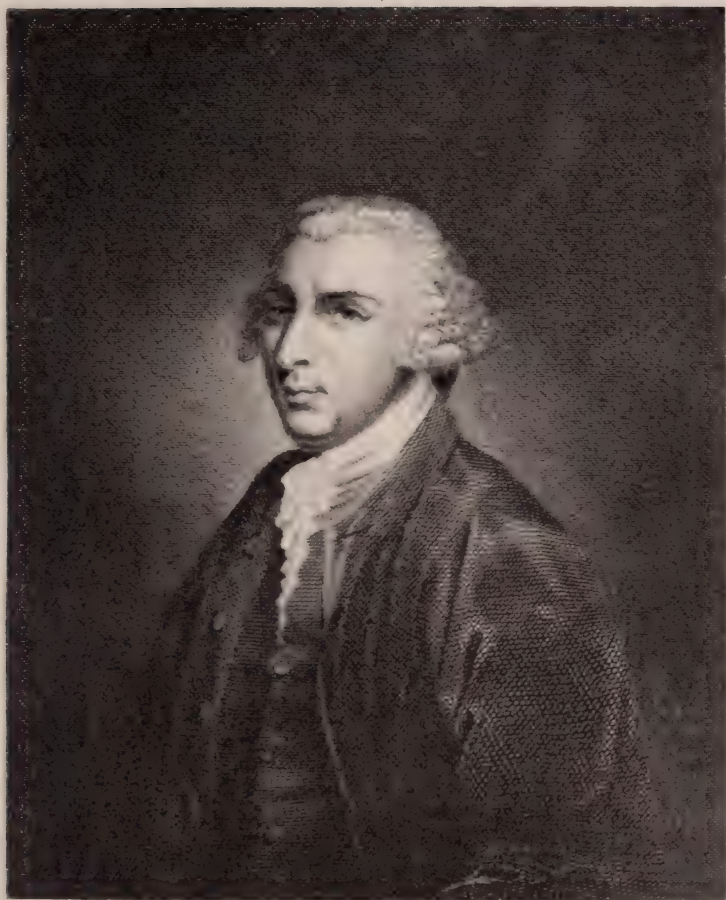
Dr. Ahmed Chérif has put to good use his knowledge of oriental languages in his historical study of Arabic medicine, "The Life of Ishaq," a work of prime interest to all students of medical history. One of the celebrated doctors of the ninth century was Ishaq, who was in practice at Bagdad, when he was called to Kairwan in Tunis, by the all-powerful, Ziadet Allah. As court physician he held full sway until there arrived in town a young Andalusian Israelite, who claimed to be a physician. Before long the newcomer ingratiated himself with the ruler and his position assured, he waged a bitter war against the aged savant. Whenever the latter interdicted a dish prepared for Ziadet Allah, the former authorized its immediate use, and vice versa; thus showing that even in the so-called days of cavaliers and courtiers, the medical profession was not free from the petty jealousies characteristic of more modern times. Ishaq, when he realized that his position as medical authority was questioned by another, was anxious to return to his former field of activity, Bagdad, but Ziadet Allah refused to sanction his wish although he had given him his written promise. One evening, at dinner, curdled milk was placed before the ruler. No sooner had he raised the spoon to his mouth than Ishaq exclaimed: "It will make you sick!" "Have no fear; eat as much as you wish," interposed the Israelite. Ziadet Allah hearkened to the latter's words,—and ate. Some hours after, he was decidedly indisposed, an attack of asthma occurring. When Ishaq was rudely awakened from his slumbers and told that his presence was demanded at once at the ruler's bedside, he said: "I forbade the eating of curdled milk. I was not obeyed. I know of no remedy for the ailment." A hundred pieces of gold were offered him to change his stubborn attitude, but he refused; later when a thousand pieces were offered, he showed the general weakness of mankind, for his stern resolutions were forgotten, and he hastened to the bedside of the exalted ruler. He ordered the application of ice, vomited his patient and pointing at the pieces in the indigested milk, said with no small degree of triumph: "If some of these particles had entered your bronchi before I was called to attend you, you would have died instantly." The despot, instead of showing gratitude toward his medical adviser, conceived an implacable hatred; the delay in getting assistance being the exciting cause. As a preliminary manifestation of his feelings, Ishaq's salary was stopped. To eke out a living, he opened an office in the town and soon saw with gratification that his worth was not unappreciated. The ruler, learning of his success, had him imprisoned but, despite the detention, patients flocked to the prison. Thereupon Ziadet Allah, greatly exasperated, decided on Ishaq's death. One night he sent for Ishaq and after outraging his feelings by heaping insults upon him, had him subjected to what surely must be considered an exquisite punishment,—the opening of the veins in his arm. During his agony, Ishaq, weak though he was, hurled these words at the tyrant: "You imagine yourself to be the greatest lord in all Arabia, but mark my words, before many days, you will fall from your high estate and the lowest of your subjects will not be as you, for I have for some time given you a poison which will deprive you of your reason." Needless to add that, after this fierce denunciation, the despot did not delay further proceedings to do away with his obnoxious subject. According to the author "the crucifixion lasted so long that a bird of prey made its nest in the body." Thus died one who was "celebrated not only on account of his knowledge of the composition of medicaments, but on account of the precision and certainty of his diagnoses."

HISTORICAL NOTES.

DR. TOBIAS GEORGE SMOLLETT.

The ranks of British novelists have to their credit a goodly array of masters of fiction who before they were won over by the blandishments of the imaginative art, practiced medicine in the humdrum way which falls to all the lesser men continuing in the toils of that self-denying vocation. To cite only a few names, there are Conan Doyle, the English Gaboriau, Charles Lever, whose books are too well-known to require mention here, and the greatest of all, the subject of this sketch. Now we often hear of the deadening effect which the vicissitudes incidental to the practice of medicine have on the imagination, but were we only to limit ourselves to a contemplation of the few names we have mentioned—there are many others which might be included—the conclusion would indubitably be that contrary to the accepted opinion, the yeoman's service exacted of those who have placed their feet on the first rung of the medical ladder, is not inimical to an efflorescence of the prime quality without which fictional writing is a drear waste of words.

That Tobias Smollett had a hard road to travel when he launched into the practice of medicine, all his biographers have made clear to us; but though his struggles to eke out an existence are in line with nearly all similar modern experiences, his lot was truly pitiable, for when he went to London in expectation of some appreciation of his worth as a physician, he found only prejudice because of his Scottish ancestry. True, Arbuthnot, Thomson, Mallet, and Mickle, though Scots, were favored by King and Court, but the future incomparable novelist met with none of Fortune's golden smiles. Oxford street was just as stony-hearted to him as, sixty years after, it proved to Thomas de Quincey. His dire want is best illustrated by the fact that instead of a partial realization of his ambitions, he was driven by the wretchedness of circumstances to accepting what to him must have been the acme of humiliation—the position of surgeon's mate on the ship of war, Cumberland, which was part of the fleet commanded by Sir Challoner Ogle in the disastrous expedition against Carthage. But out of what we to-day look upon as an unmitigated insult to genius, came a description of all the horrors of the awful undertaking that shows beyond a doubt a humanitarianism that only the deeper reading of medicine can invoke, and a literary style that already foreshadows the coming novelist. "As for the sick and wounded," says Smollett, "they were next day sent on board of the transports and vessels called hospital ships, where they languished in want of every necessary comfort and accommodation. They were destitute of surgeons, nurses, cooks, and proper provision; they were pent up between decks in small vessels, where they had not room to sit upright; they wallowed in filth; myriads of maggots were hatched in the putrefaction of their sores, which had no other dressing than that of being washed by themselves with their own allowance of brandy; and nothing was heard but groans, lamentations, and the language of



T. SMOLLETT, M.D.

despair, invoking death to deliver them from their miseries. What served to encourage this despondence was the prospect of those poor wretches who had the strength and opportunity to look about them. For there they beheld the naked bodies of their fellow-soldiers and comrades floating up and down the harbour, affording prey to the carrion crows and sharks, which tore them in pieces without interruption, and contributing by their stench to the mortality that prevailed." And in "Roderick Random" there is again enough of his medical experiences on land and sea, to harrow the contented mind into some appreciation of the tricks fortune played him in those years which philosophers consider the best in a man's life.

What caused a continuance of the undesirable quality of irascibility throughout his whole career, we are not in a position to say; but that his early experiences as a struggling doctor had some bearing on the matter, must be apparent to all who read of him between the lines. And though that prince of satirists, Laurence Sterne, in "A Sentimental Journey," characterized him as "the learned Smelfungus" because of his fault-finding and lack of adaptability, we of to-day should turn a kindly eye on his shortcomings. For despite what would mean to a less talented man insurmountable barriers to the desired clarity and mental composure for a correct interpretation of character, we see in his best books—in "Humphrey Clinker," "Peregrine Pickle," and "Roderick Random"—characterizations that hold their own against the greatest in the long line of English fictional portraits, and a boisterous humor that surely indicates what a great talent can do, to heal the wounds inflicted by an unkind Providence in that huge earthly threshing machine in which so many of the Unfit succumb during the arduous years of their apprenticeship.

SOCIETY PROCEEDINGS.

ST. LOUIS MEDICAL SOCIETY.

Meeting of November 7, 1908.

Dr. E. W. Saunders read a paper, entitled "Causation and Treatment of Infantile Convulsions,"* for which see page I3.

DISCUSSION.

Dr. George M. Tuttle thought that after the very exhaustive list of causes for infantile convulsions which Dr. Saunders had given, it would seem foolish to attempt to give a list of his own. But the idea he wished to present was that when the physician was called to a child in a convulsion, he must try to decide for himself the cause of the convulsion. He always put the case to himself in this way: that there were two general kinds of convulsions in infancy, those that might be termed functional and those of an organic nature. The functional convulsions included those due to local reflexes and the so-called toxic convulsions. Of the reflex convulsions there were several, *e. g.*, those occurring from teething, phimosis, foreign bodies in the ear, or fright. The toxic convulsions included those caused by the absorption into the system of toxins, or the decomposition products of food, or the metabolic products of tissue waste. On the other hand, were the organic convulsions due to disease or injury of some kind in the brain. This made a very practical distinction between the different kinds of convulsions. It was practical, for in a general way much might be done for convulsions of the first class, but very little for those of the second class. When it was possible to determine with which class one was dealing, it was very helpful in the treatment. As to the things that helped in making such a differentiation, one of the most important was the age. When a baby was seen in the first few weeks of life, an organic condition was suspected, cerebral injury or asphyxia or something of that kind. He wished Dr. Saunders would state the latest time after birth one might expect convulsions due to some cerebral injury at birth to first show themselves. After this period was passed, there was a period running up to two years of life during which, according to physiologists, the reflex centers were the most important part of the child's nervous system and the inhibitory centers not developed. During this period convulsions were very likely to be functional. After these two years had passed, then the convulsions were more likely to be organic. So far as the treatment of convulsions was concerned, he was glad to hear Dr. Saunders find fault with the hot bath. He was thoroughly convinced that the hot bath, when the child was having a convulsion with fever, was harmful. Certainly the access of the fever was the cause of the convulsion, and if one added to the temperature by giving a hot bath, it was simply adding to the cause of the convulsion. It was well, first, to take the rectal temperature. In the case of a child with a temperature of 104° to 106°, it was all foolishness to give a hot bath. The hot bath did nothing to relieve the congestion in the brain and might add to the dangers in the case. Probably the reason the hot bath was so much used was because mothers asked what to do for a child if it had a convulsion, and the physician told her to give a warm bath in order to give her something to do until he arrived. Often the physician saw a child having convulsion after convulsion and he never thought of giving baths for these persistent convulsions. Another thing, when one gave directions to a family, he should not say "give a hot bath," he should say "warm bath." Another thing objectionable was the unnecessary meddling with the patient. He had never forgotten the impression made upon him by an experiment of one of his professors. Two frogs were given a lethal dose of strychnine, one was sent to the dead house and the other to the laboratory. The next day the frog sent to the laboratory was dead, but the one from the dead house

*Read before the St. Louis Medical Society, November 7, 1908.

was alive. When the baby was left absolutely alone, it did more good than all the warm baths. From his own experience he believed that during the convulsive paroxysm chloroform was helpful in enabling the physician to give the child a permanent antispasmodic, as bromide and chloral, which could not be given while the child was shaking with a convulsion. This was the first time he had ever heard anybody criticize the hot bath and he was very glad that it had been done.

Dr. John Zahorsky regarded the etiologic classification of convulsions, as given by Dr. Saunders, as a great improvement scientifically, but for practical purposes it seemed rather cumbersome. His own method of determining the cause of convulsions was somewhat different. First, he tried to discover what increased the hyperexcitability of the child. The rectal temperature should be taken at once. If the temperature is over 104° , it could be said that either the fever, or the toxin producing the fever, was sufficient to cause this hyperexcitability, and after applying the necessary remedial measures to subdue the attack, the cause of the fever should be sought just the same as in a non-convulsive fever. The great difficulty here, at times, is to exclude some cerebral infection, as meningitis, when an infectious process is not located promptly in some other organ.

If little or no fever is present, we must look for evidences of that clinical syndrome now termed spasmophilia. This is by far the most frequent cause of a nervous and muscular hyperexcitability which predisposes to repeated eclamptic attacks. Only recently has this clinical syndrome been studied, and Heubner gave the name spasmophilia to that large group of cases—laryngospasm, tetany, eclampsia,—depending on some nutritive disorder. It is very doubtful that rickets alone is the pathologic condition back of the spasmophilia diathesis. Stoeltzner's claim that this tendency to spasms was caused by a calcium poisoning of the nervous system has been positively disproven. Finkelshtein was able to show a connection between this hyperexcitability of the nervous system and cow's milk. At any rate, the irritability decreased very much when cow's milk was discontinued, and the convulsive seizures ceased.

Dr. Saunders applied the term spasmophilia to an entirely different class of cases; let him tell us why. When no nutritive disturbance is present and no fever exists, two conditions must be considered: acute nephritis and epilepsy, or other organic nervous disease.

Dr. Zahorsky believed that in the light of recent researches on spasmophilia, the power of external irritation as a cause of convulsions would have to be placed in a subordinate position. Our theories on reflex causes will have to be changed. He did not regard an adherent prepuce as an important cause, even in repeated convulsions. Several years ago he treated a little boy who had convulsions with each febrile attack by circumcision. The convulsions ceased, but the febrile attacks ceased also. Certainly the fever was not caused by the phimosis. The tendency to convulsions naturally ceases at 3 or 4 years and great care must be taken in ascribing their cessation to the last remedial measure.

Some of Dr. Saunders' remarks were distinctly new and interesting. Some of them, however, need more proof; especially his theory of retention toxicosis at the onset of an acute disease. Metabolism was often diminished at the beginning and might explain the lessened excretion of solids in the urine.

Dr. W. L. Johnson thought Dr. Zahorsky seemed to doubt that circumcision would relieve spasms in any case but he had seen several cases that appealed to him as so successful that he could not get away from the idea. Dr. Saunders had quoted one of these. The little boy had repeated convulsions until the doctor and himself feared that they might be epileptic. He was operated upon and had not had a convulsion since that time. He had in mind two similar cases. One was a child six months of age and, until he was three years of age, every time he had a temperature of 102° or 103° or over, he would have convulsions. At the age of three years he was circumcised and shortly afterward had a fever of 106° and had absolutely no convulsion. Another case, a child until four years of age had had convulsions every time he had a fever, but since circumcision he had never had another convulsion. He had in mind still another case, a boy of fourteen years who had had convulsions that were considered epileptic by other physicians. The convulsions occurred chiefly when he was looking at the blackboard and that gave Dr. Johnson the clue to the cause. The patient was sent to Dr. Semple and the vision corrected. The boy was circumcised and had never had any other convulsion. The most potent factor in this case was probably the eye-strain. As

to the specific toxins that might cause convulsions, they were something of which little could be said, but one could not very well assign convulsion to a specific toxin. He doubted if it would ever be possible to determine whether there was any particular toxin that caused the convulsions. He was not yet prepared to discard the warm bath. In many cases where a child had a temperature of 105° or 106°, it was cold on the surface and the logical thing to do was to bring the surface circulation to a normal condition. Do we not warm the adult up when he has a chill, even if the temperature be very high? Many of these convulsions are the equivalent of a chill. A warm bath, too, had a beneficial effect in bringing about a relaxation and that was opposed to the convulsive tendency. He had never used chloroform that he could recall. He was afraid of it, fearing that the child might die while using it, not from the chloroform, but from the convulsion. Morphine was a very safe drug and could be given even to an infant safely, hypodermically, of course. He had found that nitroglycerine, hypodermically, as a vaso-dilator, had a happy effect. In one case in which a rachitic child had had some seventy-five convulsions in one afternoon, the nitro-glycerine apparently stopped these convulsion. Chloral, while a sedative, was in small dosage also a vaso-dilator and for that reason was especially helpful.

Dr. William Shirmer Barker took up the subject of convulsions in children followed by sudden death where the etiology was very obscure. Occasionally one was called to treat an infant in convulsions of such a grave nature that before anything could be done, in a few minutes the child dies in the spasm. Such cases were very embarrassing to the physician, and search how he may it would often be impossible to find the cause. Several of these cases had occurred in his own work, and some of them he had been able to study at post mortem. In one case a child died within four or five minutes of his first entering the sickroom and on inquiry into the history he had succeeded in making it fairly clear that there was a periodicity in the spasms which warranted making a diagnosis of a case of malarial intoxication. It is a matter of common observation that in infants a convulsion instead of a chill often occurs in malarial poisoning. Another case was a child two and a half months old. While examining the fauces with all gentleness this child had a convulsion and died within a minute. A post mortem was obtained and the thymus and adjacent glands were found very large, evidently having caused death by pressure. It was easy to see the insurmountable difficulty a case like this would present if a post mortem had not been allowed. Each of those who had spoken seemed to have his preferred classification of spasm cases for practical purposes. In his own work the speaker made a classification somewhat as follows: (1). Spasms incidental to simple fevers or slight indigestion. (2). Those due to primary cerebral disease, such as cerebrospinal meningitis, etc. Incidentally, Dr. Barker asked Dr. Saunders to state whether in the treatment of cerebrospinal-fever he had used the Flexner serum and with what success. (3). Then there was the recurrent spasm, due to what might be called the spasm habit, as a type of which we might cite the spasm of infantile epilepsy or that of hysteria. This would leave for a fourth class the large group of rachitic cases and for a last class, those having such special causes as pressure on the trachea or sexual organs or irritation of some foreign object. The Munich Clinic recently reported 100 cases of recurrent spasms with a mortality of 72 per cent, and what is rather surprising is the statement that 45 per cent of these infants were breast-fed. These cases were followed up and thus kept under observation for several years. Regarding the immediate treatment of infantile spasms with chloroform, he felt that it had advantages. It produced a muscular relaxation and had very generally resulted in prompt improvement under his use. He believed that it could be used in children with comparative safety, though not with the almost perfect safety in many cases of parturition. As to the hot bath, he believed that it often did harm. He remembered being called to see a child at some distance. He had telephoned them to give the child a warm bath if the child was cold or a cool bath if his body was hot, but they did not understand and gave it a prolonged hot bath, undoubtedly prolonging and aggravating the convulsive state thereby. But he thought it well to remember that even the warm bath, if not prolonged, did lower the temperature, though, it was true, not to the same extent as the cool bath.

Dr. Lippe agreed with Dr. Tuttle that one must have a working basis for the treatment and his classification was similar to Dr. Tuttle's. He also got the age of the baby and tried to determine if there was an organic cause, and the first thing he did was to take the baby's temperature. The skin might

be cold and still the temperature be very high. With a temperature of 102° or more there might be an intoxication as the cause of the convulsion. In any case the first thing to do was to flush the bowel. In a febrile case with high temperature, a cold pack was the thing to do. A hot bath only raised the temperature and increased the toxicosis. He recalled seeing one case, a markedly rachitic baby. The diet was corrected and one morning the father brought the child to him and stated that it had had a convulsion. While he was looking at the child it had another convulsion and died. The treatment of that condition should have been begun long before. In fact, treatment should begin before the convulsion in these rachitic cases. Not merely those cases with enlarged epiphyses, etc., but those infants that were restless and sweated about the head. Those, however, were rickety, nervous rickets, and ought to be properly treated. As to phimosis, he believed that there were cases in which the retention of smegma would, in a neurotic child, be a factor in the development of convulsions. He remembered one case, a well-fed little boy who had convulsions, and who had been taken to a number of physicians without relief. He could find nothing to account for it, but the child did have a long prepuce and he suggested having him circumcised. After the operation he never had another convulsion. He had had a case of thymic asthma and this child had recurrent convulsions due to pressure of the enlarged thymus. Surgery was advised, but was not tried. Most people were afraid of morphine in a small baby, but if given in a proper dose it was a life-saver, just as it was in cholera infantum. In cholera infantum there was nothing that would have so marvelous an effect as a hypodermic of morphine, and the effect was quicker than chloroform. One must consider the treatment of the condition after the convulsion was stopped. Then one should inquire into the underlying cause. Of course it was not always possible to carry out experimental work. And it was very difficult to get the urine from a very young baby, and most men were not able to examine urine as to its toxicity, etc.

Dr. Zahorsky said that instead of using chloroform he had been using ether, especially when the child was very ill. Ether was stimulating and was to be preferred in repeated convulsions when the child was in a very weak condition.

Dr. Jules M. Brady, speaking of the postural treatment of convulsions, said that in these cases, as has been demonstrated by Kussmaul and Tenner, there is an acute anemia of the brain. To overcome this, Koplik of New York recommends this procedure and claims satisfactory results: The child's head is lowered, the buttocks raised and the clothes freely loosened. The speaker said he had had occasion to resort to this treatment in only one instance, that of a boy four years of age who had passed through several attacks of convulsions. The result was favorable and he advocated the adoption of this method when the convulsions are repeated. To-day so many infants are fed on artificial foods that a large number of infants will be found suffering from rickets. In every case of infantile convulsions, a rigid examination should be made for rickets; in many cases, where some trivial condition is the exciting cause, rickets will be found in the background. As to why infants are so predisposed to convulsions, Saltmann made experiments on dogs, cats and rabbits and came to the conclusion that the inhibitory centers of the brain of an infant are poorly developed, while the peripheral sensory irritability is increased.

Dr. Saunders, in reply to Dr. Tuttle's inquiry about the birth injuries, said that it was a fact that children after a difficult labor long afterward showed permanent evil effects, so that it was impossible to say just how late convulsions might appear as a result of birth injuries. But if there had been no symptoms of pressure or hemorrhage early in the child's life, he would be disposed to look for some other cause for the convulsion occurring a few weeks later. In reference to chloroform it was a known fact that it was a protoplasmic poison to the young organism. That was one strong objection to it. Then, in any organism at any age, it caused a sub-oxidation as long as administered. If his theory was right that suboxidation might be the cause of convulsions, then chloroform was only adding fuel to the fire, or rather, it was taking away the fire so much needed. The case of Holt's cured by oxygen was very suggestive. In the treatment of eclampsia, chloroform was in apogee, and morphine was found to be more effective and satisfactory. As to the classification, he had expected to be opposed. After much thought and reading, he had adopted this because he thought the present classification was faulty in the extreme. Take, for example, that pedantic word "spasmophilia." It was originally used in a physiologico-etiological sense. And what was gained thereby? It had not advanced nosological knowledge a bit farther. Then why

use it to denote a large class of cases of which much more was known than that term would indicate. Rickets means more than spasmophilia. Then why should spasmophilia be taken as synonymous with tetany, as one speaker implied? Tetany was a nervous form of rickets. Many children developed bony or cartilaginous rickets without any nervous symptoms at all, but there was a class of cases in which the weight of the dystrophy fell upon the nervous system. So why not call it rickets instead of spasmophilia? Why exchange what was already known for what was unknown? Therefore, he had reserved the term spasmophilia for cases that were not understood, for the word explained nothing and should be left for the group of cases, the cause of which was unknown. Taking cases of convulsions due to cerebral inanition, chronic or acute, and classing them under the term spasmophilia, adds nothing to our knowledge of their etiology. He believed it wiser to investigate these dystrophies and put them under their proper heading. In 1896 he had published the description of a group of dystrophic convulsions terminating fatally, due to long continued feeding upon certain patent dry foods. The symptoms were nausea, occurring suddenly in apparent health, the loathing for that particular food being so great that the sight of the bottle would induce retching, insomnia, a wild-eyed, terrified expression of countenance, the scene closing with convulsions and death within a day or two. A prompt recognition of the nature of the case, leading to a change of food, and the use of analeptic measures, may prove life saving. As to phimosis, he did not think the conclusion could be avoided that it was the exciting cause of convulsions in many cases and that circumcision put an end to the convulsions. But he had seen cases in which they ceased for a time and the child afterwards became a confirmed epileptic. Whenever a child had convulsions from a reflex cause, he always feared that it might later become epileptic. In proof of the pathogenic potency of phimosis, he referred to several cases which he had published twenty-five or thirty years ago in the "Alienist and Neurologist," entitled, "A Painful Abdominal Neurosis Due to Adherent Prepuce." Although convulsions did not occur in any cases of this series, the long continued paroxysmal pains were at once relieved by operation. As to convulsions and the use of cow's milk in certain cases, it was a fact that in Graves' disease the symptoms could not be abated so long as the patient ate meat; and as soon as animal diet was stopped improvement followed, showing the intimate relation between diet and specific autointoxications. Take, for example, also the diet of kittens; every householder knew that kittens fed on meat almost surely had convulsions. There was such a thing as idiosyncrasy to certain foods in babies as well as in adults. He cited the case of a child who had convulsions until he was given taka diastase with his meals. It was evidently a toxic intermediary digestion product of starch that made the child spasmophilic. As to metabolism in fever, there was a diminished metabolism, but there was also a faulty metabolism. In the initial high temperature there was especially faulty metabolism. Later the system adopted itself better to the condition of intoxication. At first the kidneys did not excrete, later they began doing their work. There were three factors that must be taken into consideration in every case of high temperature. First, was the retention toxicosis, strictly speaking, faulty metabolism, giving rise to catabolic products much more toxic than normal, and there might be, succeeding the initial failure of metabolism an increased metabolism. As to the nitroglycerine he had used it in one or two cases several years ago and, though he had never used it since, he did believe it was of value and should be remembered. The Flexner serum was difficult to get and he had had no case of true cerebrospinal fever since its introduction. He believed that many cases of sudden death were due to thymic asthma. He had read of one case in which an incision was made as for tracheotomy and the thymus pulled upward and fastened. But the curious thing in these cases was that after death there had never been found any evidence of pressure on the trachea. Colon flushing was certainly very valuable, quickly reducing the fever and removing the intestinal poisons.

BOOK REVIEWS.

ANNOUNCEMENTS.

E. B. Treat & Co., Medical Publishers, New York, start the new year with the following most important works:

SURGICAL DISEASES OF CHILDREN. A Modern Treatise on Pediatric Surgery. By Samuel W. Kelley, M. D., Professor of Diseases of Children, Cleveland College of Physicians and Surgeons. This volume occupies a distinct place in medical literature as it is devoted entirely to the surgical diseases of children and is the first yet written by an American on the subject. The author's special training amply qualifies him for the present work. An attractive and most instructive feature is the more than 300 illustrations, mostly of the author's own cases, under which are full descriptions, thus forming little clinics in themselves. Octavo, 750 pages, over 300 illustrations; cloth, express paid, \$5.00 net.

PTOMAINE POISONING. A Concise Exposition of the Etiology, Bacteriology, Pathology, Symptomatology, Prophylaxis and Treatment of Bacterial Food Poisoning, by Prof. Dr. A. Dieudonne, Munich, Translated and Edited, with additions, by Dr. Charles Frederick Bolduan, Bacteriologist, Research Laboratory, Department of Health, City of New York. 8vo, 125 pages; cloth, prepaid, \$1.00 net.

DIAGNOSIS AND TREATMENT OF DISORDERS OF THE BLADDER, WITH TECHNIQUE OF CYSTOSCOPY. By Follen Cabot, M. D., Professor Genito-Urinary Diseases, Post-Graduate Medical School and Hospital, New York. A manual of this phase of surgery supplementing the more pretentious volumes. 8vo, 225 pages, 40 illustrations and 1 colored plate; cloth, prepaid, \$2.00 net.

A TEXT-BOOK OF SURGICAL ANATOMY. By William Francis Campbell, M. D., Brooklyn, New York, with 319 original illustrations. W. B. Saunders Company, Philadelphia and London.

To aid in the sifting and establish the comparative values of anatomic facts as associated with practical problems in surgery, Campbell has produced this excellent work, realizing that an anatomic mind is as essential to a surgeon as is an aseptic conscience. He claims as the single purpose of his book the assistance to students and practitioners in mastering the essentials of practical anatomy. The book will show at a glance the way in which this purpose has been accomplished.

It is excellently illustrated with good anatomical plates that have a surgical significance in each instance. The letter-press and the sense of the text are clear and distinct, and simply put in the latter instance. It is a good book for surgeons also.

THE TREATMENT OF FRACTURES: WITH NOTES UPON A FEW COMMON DISLOCATIONS.

By Chas. L. Scudder, M. D., Surgeon to the Massachusetts General Hospital. Sixth edition, revised and enlarged. Octavo volume of 635 pages, with 854 original illustrations. Philadelphia and London: W. B. Saunders Company, Polished buckram, \$5.50 net; half morocco, \$7.00 net.

The new edition of Dr. Scudder's excellent work on fractures is like its predecessors in the conciseness of its style and the beauty of its printed pages and illustrations. In this edition especial attention is directed to the following: Obstetrical skull fractures of the newborn, fractures of the zygoma, of the malar bone, of the superior maxilla, of the head and neck of the radius, of the neck of the femur and of the carpal scaphoid.

The last edition was prefaced with the remark that the entire treatment of fractures of the femur was undergoing a change. We note in this edition that Dr. Scudder has called especial attention to the abduction method of treatment advocated by Whittman. This chapter in the new edition gives the best and most modern ideas regarding this particular fracture, in the clearest manner. Also the author has laid special stress on unreduced dislocations of the elbow, on acromioclavicular dislocations, on pathological fractures, on old fractures of the radius and on Volkmann's contracture. There is also an excellent chapter on the treatment of ununited fractures. On the whole the new edition is a work of which Dr. Scudder and the profession in America may well be proud.

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EDITORIAL.

LITERATURE AND INSANITY.

The French medical mind in relation to the literature of France is peculiar in that it does not hold itself aloof from a scientific appreciation of those superior minds who in their highest flights of genius are prone to brush the line of cleavage between sanity and insanity. In other countries, we take it, doctors leave the contemplation of abnormalities, as they manifest themselves in the actions of their literati and in the literary performances which are above the ordinary, to the analytic critics who make a specialty of character-building. Now, although this is convenient in so far as it relieves the medical mind of the onus of difficult gropings in mazes that are too tantalizing for easy solution, it results in many prevarications of the truth, not because of any intentional desire to distort, but because the purely literary critic is but ill-prepared to envisage a matter which, while it may not entirely belong to the domain of medicine, should be approached from an avenue that is open only to the medical mind. Illumination of intricate subjects without the help of a scientific knowledge of the matter in hand, rarely results in what Lord Acton calls "the dogma of impartiality." But though it may be contended in certain quarters that the subject of vagaries as they pertain to the intellectually elect is not fraught with enough scientific purport to arrest the sort of medical thought that nurtures itself on distinct signs and symptoms of disease, it must nevertheless be conceded by all fair-minded votaries of the art of medicine, that the makers and influencers of our intellectual main-currents are the decided forces in the upbuilding or lowering of the morale of a community and therefore should be adjudged rightly by the scientific critic. Again, what better exercise to arouse the torpidity of a mind inured to the drab humdrumness of general practice, than to engage it in the complicated but withal fascinating study of the literary workers who have played openly and without fear, on an ampler stage than is wont to be the case with those

whose sanity, as conceived by a conventional society, though an asset greatly to be desired, impresses the age in which they live to so slight a degree that succeeding generations remain uninfluenced by the ripples their presence may have caused.

As we said before, the acumen and perspicacity of the French have recognized the possibilities of the subject, and as evidences of their faith in the good results which a deep study, combined with analysis, may bring forth, the array of books written by medical men in the past year bears excellent witness. Whether we consider "Poetry and Insanity,"¹ "The Insanity of Gérard de Nerval,"² "Thomas De Quincey,"³ "The Degeneracy of Edgar Allan Poe,"⁴ "Literature and Insanity,"⁵ or "The Neurotics," by Mme. Arvède Barine, the same thought recurs, namely, the insoluble problem of the relation of genius to insanity. And of all the centuries which can make boast of extreme literary activity, the nineteenth century appears to be the one which has been most productive of a decided interplay of genius with insanity. So great has been this tendency that the critic who attempts inquiries into the matter must perforce conclude that the best expressions of the mentality of that time were so largely overlaid by a multitude of actions that derive their sustenance from sources peculiar to the insane, that even though a desire for fair play rules his judgment, his straightforward opinion must incline toward the cognition that the majority were surely insane in the fourth, sixth or eighth degree, if not semi-insane as some authorities have contended. Assuming the postulate that the intellectual regenerators of an age are not the possessors of the sanities which act as ballast with those who are less fortunate in the way of extreme mental development—and now we are limiting ourselves to those prose-writers whose biting phrases have changed the currents of thought so completely that there was a radical upheaval of the somnolence attaching to accepted verities—the transition to the masters of poesy as illustrative of an abnormality resulting from intense subjectivity, is readily made and is easy of comprehension. For of all the arts, that of poetry implies an impetuosity with small respect for the conventions and a combativeness that is continually gathering its forces to destroy the petty meannesses that encumber our better natures.

1. Poésie et Folie, par Drs. Antheaume et Dromard.

2. La folie de Gérard de Nerval, par Dr. Barbier. Thèse de Lyon; chez Rey.

3. Thomas de Quincey, mangeur d'opium, par Dr. Paul Guerrier. Thèse de Lyon; chez Rey.

4. La dégénérescence d'Edgar Poë, par Dr. Carrère. Thèse de Toulouse.

5. Littérature et folie, étude anatomo-pathologique du génie littéraire, par Dr. Paul Voivenel. Paris: Felix Alcan.

Were all this accomplished by a philosophy that takes its cue from the sane and health kaleidesopic presentment of modern life there would be less cause for exhibitions of mental states that appal on account of their close affinity with those which are only too well-known to the alienist. Unfortunately this is not so, and what we do see is that the clearer and more dulcet the song of the poet—it cannot achieve clarity and the distinction of unusual melodiousness without an obsession of subjectivity—the stranger are the mental traits that warp the props which make for stability. In fact, it has been shown by Drs. Antheaume and Dromard that some of the poetry emanating from the alienated is no mean verse; and that were the source unknown, many good critics would attribute the productions to acknowledged masters of the poetic art. As a further proof of what mental instability may stand for as the powerful agent in the making of poetry of the highest order, we need but cite the case of the French poet, Gérard de Nerval, who wrote "Sylvie," one of the masterpieces of French literature, at a time when no self-respecting alienist would have pronounced him sane. And not only was this poem written under circumstances diametrically opposite to what are supposed to be the necessary conditions for literary composition, but many of his other poems had a like birth; from which we may infer that it was the insane Gérard de Nerval to whom the world is indebted for some of the best expressions of French poesy.

What has been said of Gérard de Nerval may be said in a lesser degree of other masters of song—of Poe and Baudelaire, of Rossetti and Francis Thompson. Although their express testimony as to their mental states while composing is lacking, none of them can be considered consecutive and logical thinkers, judged by their best productions. As for the disfiguring touches which manifested themselves in their daily avocations, it is significant that abuses of drugs and alcohol played no minor part and may have contributed their share in changing both character and endowments. Be this as it may, the fact remains that the outstanding feature in the lives of the poets we have mentioned is that mental instability was the positive exciting cause of their best productivity, and that the high lesson to be conveyed is the disturbing thought that, despite our many studies in the province of psychiatry, we have not yet solved the relation of genius to insanity.

CLEMENCEAU AND THE RIOTOUS MEDICAL STUDENT.

The medical student who was supposed to have come under the yoke of the best civilizing forces of our well-arranged society many years ago, is again displaying the truculency that censorious critics are in the habit of associating with unreformed and unrefined savages who persistently hold aloof from benign influences. That such should be the case must be a source of worry to those who have downed their prejudices sufficiently to admit that, despite outward appearances, the medical student is really a passive entity whose ebullitions when he attempts to right his wrongs, are upheavals of slight moment that bear the hall-mark of a deprecatory puerility. In truth, this belief, were it sanctioned by a complete knowledge of the inner life of the medical student, would be about the most engaging to entertain; but since facts speak more loudly than ideas derived from outward appearances it behooves us to say that the medical student, while not enamored of belligerency, is decidedly radical when infringements of his rights occur. Now, while it may be contended that his rights were not interfered with by the new examinations instituted by the Faculty of Paris—the examinations entitled qualified men to certificates of admissibility for the posts of *professeur agrégé* in the different medical faculties in France—the fact that the new ruling had for its object the creation of a higher class of practitioners must not be lost sight of. The act, then, of the authorities could not be construed otherwise than a reflection on the State diploma of doctor of medicine; a criticism that meant small respect for the wearisome years in pursuit of a goal; a mandate that read that the republic of medicine was no longer a republic but a limited monarchy to be governed by the privileged classes. Naturally the radicalism of the normal medical student felt itself outraged, and though one might attribute such feelings to supersensitiveness, there was another factor outside the medical student's special province that added to the general indignation. The protest of the 12,000 medical men against the new departure was no small voice in the final demonstration that made it necessary for the Director of the Police to summon the mounted Republican Guards, for the weight of their opinion must have been an incentive to violence on the part of those already in a tempestuous frame of mind. As to whether or not the medical men preponderated in this small revolution, is still an open question; but judging from their indignation, on account of the questions in the new examinations including the elementary studies of anatomy and physiology, it is probable that they were quite active. In sum, there is here to contemplate and ponder a strife of Demos against Patricius.

Above the din and clatter incident to the disturbances in the Latin Quarter there appears a distinguished figure, the head of the Ministry, Georges Clémenceau, who must have viewed the uproar around the Faculty of Medicine with feelings that took him back to his own youth. For not so many years ago, Clémenceau, when a medical student, defied the Government on more than one occasion; was imprisoned for two months for attempting to celebrate the anniversary of February 24th, 1848; and was, to put it mildly, much more disorderly from the point of view of conservative society than any medical student in the recent French riots. But though his behavior as judged by the Imperial police was unconventional enough to necessitate a nocturnal visit to his lodgings, it did not interfere with his being busily engaged on a thesis that eventually gained him his degree,—“*Sur la génération des éléments anatomiques*.” Nor later on during the direful days of the Commune was he more tractable, for he was expelled from Montmartre and placed under arrest. These are not edifying things to cite nor are they of much value as a key to one's character. But since the Premier is called upon to decide whether or not the written objections sent him are feasible, would it be wise for him to forget just how he felt when Imperialism was the bugbear that drove him into open revolt?

The medical student throughout the world need not feel himself dis-plumed because a demand, which should have been heeded, ended in a riot. What the French student asked for was within the bounds of reason and had, moreover, the great primal quality—the leveling of all men engaged either in the study or the practice of medicine. Class distinctions are well enough in their way in the eddying circles of our social maelstrom, but when they are introduced into an honored republic such as medicine has always been, they are to be decried. No matter how superior the graduate as an intellectual quantity, no matter what the name of the medical college, provided it has the proper standing, the man who bears a diploma should be the equal of all his medical fellowmen; not their superior or their inferior. The strength of the science of medicine lies outside social distinctions; it fructifies from soil that is not furrowed for seeds of petty dissension; its inherent qualities are such that out of a clod a real man worthy of its teachings may be evolved. So soon as it fails to do this the times will be ripe for the introduction, by ingenious authorities, of a superior order of medical men to dominate others of a lesser degree, in the hope that a republic may be superseded by a tinsel imitation of a monarchy.

THE OPIUM QUESTION.*

The future ambitious and ingenious collector of literature bearing on the sempiternal discussions on the anti-opium movement in China, will have no difficulty in amassing an enormous quantity of material, by comparison with which the vast collections stored in European muniment-rooms pale into insignificance. And that his ingenuity will be taxed and his patience sorely tried in case he desires to compile a statistical and historical work, needs no further mention here, for the complexion of the various opinions partakes of the exasperating involvements which always arise when all sorts and conditions of critics, of nationalities too numerous to mention, voice their sentiments. With this thought in mind, it is with some relief that we have recently read two decidedly sane expressions* of the dire situation in China: one from an English pen and the other from a Chinaman who has benefited enough by cosmopolitanism to be the detached critic unaffected by national emotionalism. Now though the Englishman is not to be criticised for any lack of data or clearness in the presentation of facts well known to all who have studied the situation, his optimism, in viewing the good results already accruing from the Edict published in the *Pekin Gazette*, September, 1906, is altogether too rampant to carry conviction. The importance of edicts is not to be slighted when the question of how best to abolish an evil is under consideration by a critic who has an Englishman's veneration for the law, but while recognizing their value as the iron hand that has the strength to crush, the national traits of a people and the form of government that exists, are not to be weighed too lightly. And in this respect the Chinaman makes many remarks that cut deep into all the problems which the Chinese are facing to-day, for with an insight that cannot be other than the product of the right interpretation of character, and with a calm appreciation of the results achieved from an awakening education, he boldly steps into the rôle of the wise and upright judge who recognizes the basic principles without which reform is impossible. Surely an autocratic government with great concern for its own bureaucracy and small concern for its people—its decentralization precludes a paternalism that would take cognizance of the advantages of education and the development of character—is not the power to appreciate the temper of a people, and combat by sober judgment and earnestness of intent a vice that has already one hundred million victims to its credit.

*The Opium Question. By Britannicus. North American Review. Social Transformation In China. By a Chinese Cambridge-man. Contemporary Review.

At this late day recriminations are not only out of order but positively harmful as an obstacle to the solution of a problem. Whether or not the English, with their commercial instincts sharpened when a vast field was opened to them for an outlet of the best product of some of their Indian Provinces, were justified in their operations, is of no moment to-day. Commerce is not tinged with a kindly philosophy that makes for altruism; and although other nations may be critical of the English because of what has resulted from the introduction of a sedative among a people devoid of ambitions on account of a government that crushed their smallest aspirations, they cannot in all honesty proclaim for themselves a higher grade of purity in their commercial dealings with less advanced peoples. That the English had the *arrière pensée* that the most receptive victims for their Indian product would be an abjectly ignorant people eager for forgetfulness of their wrongs because tyrannized by a medieval autocracy, is claiming for a nation of great practicality too great a knowledge of the subtleties of sociology and ethnic traits. But that they were not loth to continue their operations directly they saw the commercial opportunities, is a phase of commercialism that might be criticised as "higher commerce," so indifferent is it to the behests of conscience. Had the Chinese Government been more solicitous for the welfare of their people and less avid of a medievalism that meant the shackling of the ignorant by the official class, the field for all these nefarious operations would have been limited; but at the time of which we speak and for years later on, education was only for the elect since the Chinese idea, abetted by a wise and self-sufficient government, read that to achieve the desired end thousands of volumes pertaining to classical and literary subjects had to be mastered.

A happier state for the people has already set in. The small revolutionary idea, which has as its inherent quality a sense of equalization, is responsible for the social foment which is awakening the people to the needs of railroads, public schools, newspapers and reviews. Editors of a commanding position have the ear of the people and through the medium of the *Min-pao* (the People) and the *Sin-min-chung-pao* (the New World), not to mention the ten newspapers published in Peking and the "protected" newspapers at Shanghai, the masses are already benefiting by an instruction which has been withheld from them only too long. All the edicts of an autocratic government are as naught when compared with this gradual social upheaval; for out of the free will of the people will issue the thought that only in education is there to be found the sword of Gideon with which to wreck the hydra-headed monster English commercialism has fed to sleekness throughout the retrograde provinces of China.

OPINION AND CRITICISM.

THE PSYCHOLOGY OF THE CHILD.

In the attitude of the modern instructor toward the child there are positive indications that the cult of seriousness, as it is worshipped by this special purveyor of knowledge, refuses absolutely to take cognizance of what is most natural, to-wit, the unreceptivity of the immature mind to the deeper meaning of all the problems which are part and parcel of stressful adult life. That purblindness to the needs of the evolutionary mind should preclude the intake of a mixed pabulum is not the brightest page in modern psychology, for while it may seem to the pedagogic mind that the narrow circle of cold facts should rigidly encompass the mind of the child, there is that extreme phase of sanity here that makes us fearful lest a fierce fanaticism may not be worse than the grossest laxity. The grave, dignified and extremely unhumorous ranks of modern teachers—a class of men who by their acts appear to be harking back to the old days of the humanists—are never at a loss for a new recruit to strengthen their claims as advanced spirits in the educational world; for though the firmament may look unpromising as regards the advent of a new luminary, this is but a deception due to the fact that the uninitiated are ignorant of the hidden wisdom and philosophy in the extraordinary proceedings of the many-sided interpreters of modern psychology. As illustrative of the inexhaustibility of the subject, nothing could be more pertinent than the latest utterances of Dr. Max Meyer, professor of experimental psychology at the Missouri State University.

According to this expositor of the art psychologic, it is baneful, to say the least, to sow on soil that should be subjected to the intricacies of the world's mightiest problems, the transparencies and incongruities of the fairy tale. Into what particular cells of the brain the nefariousness of so frivolous an undertaking fastens its fangs is not explained to an eager world, but that a great and irremediable harm is done cannot be questioned, for when the word goes forth nowadays that a proceeding is wrong from a psychologic point of view, the simpler and plainer medical mind is too abashed to protest. Hence it must occur to all of us that the entertainment derived from truly German sources—from a country that must be considered the unhappy home of the fairy tale since the frivolity of its people, despite their claims to intellectuality, shows a deplorable weakness for ogres and bewitched maidens—is unsuited to the mind of the growing American child; and that, if further indulged in, the vast beauties of our well-developed commercialism will be unappreciated by minds nurtured on the cobweb of easily-penetrated fantasy.

The real achievements of psychology are matters of moment and should invite the kindest of criticism. It is a fascinating study and has a latitude that must be the envy of other studies. But just because its limitations, if there are any, extend into those far distances impenetrable to the ordinary on-looker, there should be considerable saneness in all its undertakings as a deterrent to the indulgence of what is visionary. Already the mind of the child is being steered toward those interesting sexual questions without which a modern education is supposed to be incomplete, and though this unusual work is receiving the plaudits of many enthusiasts, the promise and presage of a more admirable turn of mind in the child is not yet discernible. There can be no question that we are making an onslaught on the illusory element in primary education, but when the child has digested our illuminating instructions will it benefit, or will it be only another interesting study in abnormality for some future Ibsen, Strindberg or Brieux? Indeed, there is nothing more startling for future contemplation than the rank and file of children made worldly wise by a complete understanding of the House of Rahab and a so-called commendable ignorance of the fairy tale.

LITERARY NOTES.

"As Others See Us," by James Graham Brooks (The Macmillan Co.), has unusual qualities, not because its merits are of a high literary order but because its contents are of so varied a nature that they include very nearly all the criticisms which European critics have seen fit to mete out to the waywardness and childishness of the American people. The first thought upon reading this book is one of revolt against the many unkind remarks that have been made about our shortcomings, by men and women ill-prepared for the somewhat difficult task of detecting the outstanding qualities which have always made for the best there is in our Americanism; but though the feeling of resentment may be strong enough to make the reader every now and then a bit distrustful of the justice attaching to the critic's thought, even when the thought is tempered with kindness, he cannot but see that much of what has been written about us is not too closely related to those prejudices which have their roots in narrow mindedness and the smallest sort of intellectual vision. That a young people, such as we are, is bound to come in for a goodly share of rather harsh criticism at the hands of Europeans whose training has been in a more literary atmosphere than can be found with us, should not fill us with dismay. Rather should it be a source of gratification that by comparison with older standards, when they are expressed by severe and self-restrained writers, our defects are brought home to us by the rule of rigid and inflexible justice. That all the critics of our national peculiarities have not been free from preposses-

sions and prejudices does not alter what we have just said, for though Charles Dickens had his quota of these human failings and allowed exaggeration to enter into his estimate of our Americanism, no more truthful words have ever been written than his description of American journalism in "Martin Chuzzlewit." After finishing so sane a book as is Mr. James Graham Brooks's "As Others See Us," the reader, if he is not barren of thought, will find himself a better American than he was before the intellectual activity of the writer made him aware of the bitter fruits of dishonor, overpraised mediocrity and unseemly vulgarity.

Plague Epidemics, as illustrative of the great destruction which they effected in the past, are always of interest to the modern reader. At no period in history were they more destructive than between the fifteenth and seventeenth centuries; therefore the thesis written by Dr. H. David and recently published by Maloine, of Paris, has considerable significance. The epidemic which receives the longest notice is the one which almost devastated the town of Angers in the sixteenth century, though it is well to mention here that even at that early day and for that matter years before—in 1407, to be exact—recognition of the fact that the hog is responsible for its transmissibility, was already an established factor in its study. Barber-surgeons and farriers were in the habit of keeping the blood taken from patients and animals and giving it to hogs as a fattening procedure. These were allowed to roam about the streets at will and feed on offal, and soon the danger of eating hog-flesh, the principal viand of the time, was recognized. On account of great dissatisfaction among the people laws were enacted and stringently enforced so as to prevent the sale of pork unless the hog was kept thirty days under strict surveillance, by the butcher, before its meat was sold in case it was got from a farrier, and forty days in case it was derived from a barber. When we remember how prone the hog is to the plague; that the bacillus of Yersin may be found in its blood even three or four weeks after a cure has been effected; that phlebotomy is an important part in the treatment of the disease, the laws which were made in 1407 were certainly wise ones, since, according to Willm, the inoculation with the blood taken from a diseased hog produces the disease in 83 cases out of every 100.

ORIGINAL ARTICLES.

THE SYPHILITIC FORM OF MULTIPLE SCLEROSIS.

By WILLIAM G. SPILLER, M. D.,

Professor of Neuropathology and Associate Professor of Neurology in the
University of Pennsylvania; Neurologist to the
Philadelphia General Hospital,

and

ANDREW H. WOODS, M. D.,

Assistant in the Neurological Department of the University of Pennsylvania,
Assistant Neurologist to the Philadelphia General Hospital.

Syphilis may bear a resemblance to multiple sclerosis both in its symptomatology and in its pathology. One of us in association with Dr. Camp* has reported a case which clinically appeared as one of multiple sclerosis from the symptoms of ataxia, intention tremor, scanning speech, pallor of the temporal side of one optic nerve, and vertigo. Those who saw the case regarded it as one of multiple sclerosis, and yet the microscopical examination showed round cell infiltration and thickened vessels without sclerotic patches—the common findings of syphilis of the nervous system.

We propose in this paper to consider the pathological aspect of the subject, and to show that syphilis may cause sclerotic patches in the central nervous system resembling the degeneration of multiple sclerosis without necessarily producing the symptoms of the latter disease.

Susan D. was admitted to the Philadelphia General Hospital in the service of Dr. Mills, November 28, 1907, and afterward came into the service of one of us (Dr. Spiller). She died March 17, 1908. She entered the hospital because of pain and weakness in the lower limbs and inability to walk. She had had three children and four miscarriages, and denied syphilitic infection. When she entered the hospital she stated that five weeks previously she had first noticed the weakness of the lower limbs, and about five days later she began to have severe pain in these limbs below the knees. She had lost control of the bladder and bowels. Her age was given as 52.

The pupils were equal and regular. The iridic reactions to light, accommodation and convergence were preserved. The grip of each hand

From the Department of Neurology and the Laboratory of Neuropathology in the University of Pennsylvania, and from the Philadelphia General Hospital.

*Spiller and Camp. American Journal of the Medical Sciences, June, 1907.

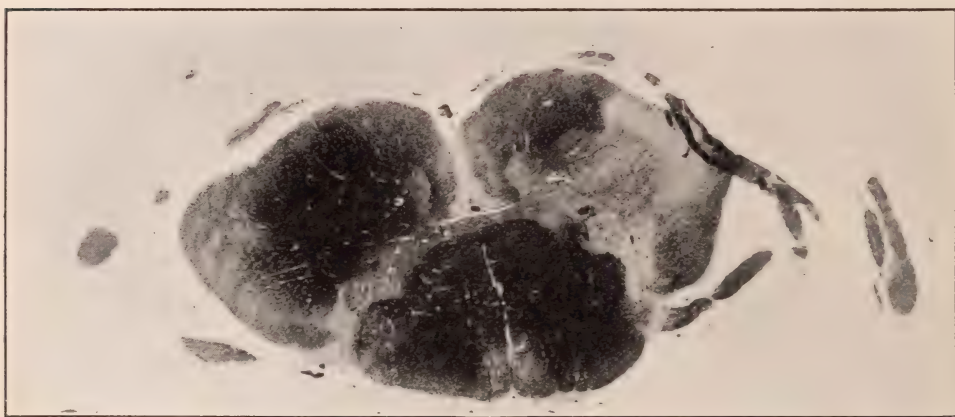
was somewhat diminished, as was also the voluntary power of the upper limbs. The biceps and triceps reflexes were exaggerated.

The lower limbs were edematous and were kept flexed at the knees, and movement of these limbs caused much pain. The patellar reflexes could not be obtained, probably because of the position of the limbs. There was a suggestion of ankle clonus on the left side.

An examination made by Dr. McConnell, in Dr. Mills' service, December 1, showed atrophy of the right interosseous muscles. There was no tremor of the limbs. The patient had very little voluntary movement of the lower limbs. Sensation seemed to be normal in all forms.

She remained in much the same condition until her death, March 17, 1908.

The symptom-complex was therefore one of spastic paraplegia of the lower limbs with contracture of the limbs, and pain produced by passive



Sclerotic plaques in a section from the cervical region.

We are indebted to Dr. Alfred Reginald Allen for the photograph.

movement of these limbs, probably because of the contractures; exaggeration of tendon reflexes in both upper and lower limbs, although the reflexes could not be well demonstrated in the latter because of the position of these limbs; and loss of control of bladder and rectum, with preservation of objective sensation. The typical symptoms of multiple sclerosis were absent, as there is no mention of scanning speech, intention tremor, nystagmus, etc., and the diagnosis of multiple sclerosis was not made.

Numerous areas of sclerosis are found throughout the cervical and upper thoracic regions of the cord, and are confined to these regions. Some of these resemble very closely the degenerated areas found in multiple sclerosis. They affect the grey as well as the white matter, are of various shapes and sizes, and in general are not sharply defined from the surrounding normal tissue, but shade off gradually into the normal tissue. There are, however, regions in which the definition between the degenerated and normal tissue is quite sharp, as in multiple sclerosis.

The small vessels of the cord are much thickened in many regions; and the neuroglia around many of them is denser than in other places, making it appear as though a perivascular sclerosis were the origin of some of the sclerotic patches.

Many of the vessels in sclerotic foci are distinctly thickened, but there cannot be said to be any increase in the number of the vessels in these foci.

Round-cell infiltration is distinct in the pia, but is of only moderate intensity. The vessels of the pia are somewhat thickened although they do not show a very distinct proliferation of the intima.

Some of the nerve-cells of the anterior horns show intense pigmentation, and in some places the nuclei are displaced to the periphery of the cells.

Round-cell infiltration of the pia is present in the optic nerves. It is not intense anywhere.

Secondary degeneration is not very distinct.

While the resemblance between the sclerotic areas in this case and those of ordinary multiple sclerosis is, on superficial examination, very striking, the two conditions differ in essential features: The round-cell infiltration of the pia; the gradual shading off of the sclerotic areas into the normal tissue instead of the sharp line of differentiation; the vascular and perivascular sclerosis in regions of the cord where there is no distinct focus of sclerosis, indicate that the process is syphilitic, and distinguish it from the disease known as multiple sclerosis. And yet it is well to bear in mind that in multiple sclerosis the definition between the sclerotic and normal regions is not invariably sharp, and that there may be thickened blood-vessels within the sclerotic foci.

v. Bechterew in 1896 spoke of the syphilitic disseminated sclerosis in which areas of sclerosis occur in the brain and spinal cord, as a little known type of syphilis. In the thirteen years that have elapsed since the appearance of his paper few important contributions with necropsy reports have been made to this subject.

v. Bechterew discussed the question as to whether the vascular thickening in the sclerotic areas was primary and the cause of the surrounding sclerosis, or was secondary to this sclerosis. The syphilitic nature of his case was shown by a gumma of the left optic thalamus and the characteristic disease of the basilar artery. The foci of sclerosis were found about much thickened blood vessels. Thickened vessels were observed in parts of the brain without the surrounding sclerosis, and were present in all the sclerotic areas; and v. Bechterew has no hesitation in saying that the thickening of the blood vessels was primary. He found secondary degeneration in the spinal cord and brain as a result of the sclerotic foci, also hemorrhages in and near the foci and softening about some of the foci; all of which lesions are not characteristic of multiple sclerosis.

Clinically v. Bechterew's case was not typical of multiple sclerosis. The nervous symptoms appeared one year after the syphilitic infection.

After study of the limited literature on the subject he was forced to conclude that previous to the appearance of his own paper the disseminated syphilitic sclerosis was not well established.

He attempts to differentiate clinically between the true and the false multiple sclerosis. In his case weakness of the lower limbs was an early symptom, this he thinks uncommon as an early sign of multiple sclerosis, and in this disease it never is a pronounced paraplegia. [One may with reason doubt the correctness of this statement.] Disturbance of the bladder was an early symptom in his case; this is seldom an early symptom in multiple sclerosis. The early paresthesia of his case likewise is uncommon in multiple sclerosis. Local tenderness of the vertebræ to percussion, present in his case, he regards as common in syphilitic spinal affections, but it has not been observed in multiple sclerosis. The tremor of the limbs and head, the scanning speech, and nystagmus were not present in his case, and he thinks it important that attention should be paid to these symptoms, as further observation may show that they are usually or always absent in the syphilitic disseminated sclerosis. The case of Spiller and Camp shows, however, that intention tremor and scanning speech may be caused by syphilis even without the formation of plaques. The syphilitic form seems to have a more acute course; in v. Bechterew's* case the duration of the process was one year and three months, and yet acute multiple sclerosis is recognized. The syphilitic form v. Bechterew mentions is influenced by anti-syphilitic treatment, but this seems to us most unreliable in distinguishing the disease from multiple sclerosis, as changes in the intensity of the latter disorder are common. The early paresis of ocular muscles in his case he also employs as diagnostic.

In v. Bechterew's case the foci were in the brain as well as in the spinal cord; in our case they were only in the cord, and yet clinically and pathologically the two cases have much in common.

Catola has given an excellent résumé of the views of various authors on syphilis as a cause of multiple sclerosis as held at the present time. Some writers have attempted to distinguish a form of sclerosis with somewhat indefinite boundaries, complete degeneration of medullary sheaths and of axis cylinders, and secondary degeneration, as distinct from the usual type, and as having syphilis as one of its causes (Marie).

Müller regards the syphilitic multiple sclerosis as secondary to arteritis.

In the opinion of some the syphilitic multiple sclerosis is to be distinguished by degenerative changes of the nerve cells and axis cylinders, by secondary degeneration, and by thickening of the vessels within the sclerotic areas.

There is such a difference of opinion as regards the tissue first affected in multiple sclerosis that we have no means of reconciling the conflicting views; it is uncertain whether the vessels are first affected or

*v. Bechterew. *Archiv. für Psychiatrie*, Vol. XXVIII, 1896, p. 742.

the neuroglia, and in many instances thickened vessels have been found in the sclerotic patches. By some, multiple sclerosis is considered a congenital proliferation of neuroglia.

The conclusions reached by Catola are that the distinctions between the different forms of multiple sclerosis are unreliable, and that syphilis can not be eliminated as a cause.

In the first case reported by him the sensory symptoms were more pronounced than is customary in the true multiple sclerosis. The patient had pains in the back, shooting pains and diminution of sensation in the lower limbs, and loss of stereognostic perception. The findings were: Thickening of the pia over the base of the brain and over the spinal cord with infiltration by lymphocytes and polynuclear cells, sclerotic plaques in brain and cord, sclerosis of all the vessels of the pia and spinal cord with some peri-vascular cellular infiltration. Secondary degeneration was absent. Catola thinks the syphilitic nature of these lesions is shown by the perivascular alteration. From the illustrations of this case many of the sclerotic areas appear to shade off gradually into the normal tissue.

In his second case sclerotic areas were found, and the vessels of the cord were thickened, but perivascular round cell infiltration and round cell infiltration of the pia seem to have been inconspicuous. It is stated that the perivascular spaces contained occasionally some round cells. Secondary degeneration was absent. In the summary of the case the vascular lesions are described as thickening and degeneration of the walls of the vessels. The author might well have taken more space to establish the syphilitic nature of these sclerotic plaques, as beyond a syphilitic infection the syphilitic character of the sclerotic areas is at least open to question.*

Nonne** in the second edition of his work on syphilis, having the date of 1909, says that multiple sclerosis in its typical symptom-complex is not caused by syphilis. The course of the syphilitic form is different and the typical symptoms of multiple sclerosis: scanning speech, rotatory nystagmus, intention tremor and the general tremor of trunk and head, are not observed in cerebro-spinal syphilis. Syphilis, in his opinion, certainly plays no part in multiple sclerosis. Schuster's clinical case he does not accept, but he acknowledges that the "formes frustes" may be difficult to distinguish clinically from cerebro-spinal syphilis.

Certain authors (Orlowsky, Thomas and Long***) have held that syphilis and multiple sclerosis have occurred in the same person. The possibility of the simultaneous existence of these two diseases in one nervous system must be acknowledged, but it is not a probability. The

*Catola. *Nouvelle Iconographie de la Salpêtrière*, Vol. XIX, 1906, p. 337.

**Nonne. *Syphilis und Nervensystem*. 1909.

***Orlowsky. *Neurologisches Centralblatt*, 1897. Thomas and Long. *Comptes rendus de la Soc. de Biologie*, 1899.

case of Thomas and Long is one in point and called forth a vigorous protest from Ladame,[†] who regarded it simply as an unusual example of spinal syphilis.

Oppenheim^{††} expresses himself very forcibly and in his fifth edition of his text-book has not seen fit to alter his opinion that syphilis has nothing to do with multiple sclerosis, although syphilis may cause multiple foci of degeneration, as demonstrated by v. Bechterew, but he states that Catola has made it probable that syphilis may cause a disease related to multiple-sclerosis. Oppenheim's study of syphilis of the nervous system has been so extensive that his opinion demands respect.

Williamson* in his recent work states that: The disease has no relation to syphilis, calling attention, however, in describing certain anomalous syphilitic lesions, to the occurrence of cases resembling disseminated sclerosis in the evidence of multiplicity of lesions.

We might refer to the views of Gowers and other writers expressing doubt as to the relation of syphilis to multiple sclerosis, but with one or two exceptions we have confined our quotations to recent authors who have expressed an opinion on this subject.

The conclusions we have reached from our investigations of the case reported in this paper and other cases are:

(1) Syphilis may in rare instances produce a symptomatology indistinguishable from that of typical multiple sclerosis, and this without the formation of sclerotic plaques, but by the ordinary lesions of syphilis viz. arteritis and meningitis.

(2) Syphilis may produce sclerotic plaques in the spinal cord resembling those of multiple sclerosis, without producing the typical symptoms of this disease. These plaques have not the sharp definition seen in most cases of typical multiple sclerosis, and yet multiple sclerosis may exist without plaques sharply defined from the normal tissue. The syphilitic form of multiple sclerosis presents round cell infiltration of the pia and thickening of the blood vessels. Thickened vessels with a small amount of perivascular sclerosis will usually be found in certain regions without the formation of plaques, though plaques may be present at other levels of the cord. In some places slight neuroglial proliferation without thickened vessels may be detected, resembling in no way true plaque formation, but appearing more in the nature of slight diffuse secondary degeneration. Gumma also may occur in the brain. Secondary degeneration is more common in the syphilitic type, but does occur rarely in multiple sclerosis. Nerve fibers are not always completely degenerated in the syphilitic plaques. Careful and thorough examination will almost always, if not always, make a diagnosis possible between the lesions of syphilis and those of multiple sclerosis, even though they may have a decided superficial resemblance.

[†]Ladame. *Revue Neurologique*, Vol. 8, 1900, p. 66.

^{††}Oppenheim. *Lehrbuch der Nervenkrankheiten*, Fifth Edition, 1908.

*Williamson. *Diseases of the Spinal Cord*. 1908.

A RARE KIDNEY CASE.

By H. TUHOLSKE, M. D., LL.D., and W. M. ROBERTSON, M. D., of
St. Louis.

The case, which we have the honor of presenting, we believe to be exceedingly rare, if not unique. At any rate, according to the literature at my command, nothing exactly like it has ever been described. Permit me to review briefly the categories into which I desire to place the case and to state that I believe, because of its many peculiarities, it demands a place of its own.

According to Israel, of congenital anomalies of the kidney, the most important is aplasia,—the total absence of the kidney. He states that, in over 300 cases operated on by him, he never came across a single case of congenital absence of a kidney, but that he found one, incidentally, in a postmortem examination on a patient who had died of a phlegmonous inflammation of the leg. In the next division, congenital dystopia of the kidney, he says the organ is most frequently found in the pelvis. The congenital form of dystopia may be distinguished from the acquired form by an unusually low origin or termination of the renal vessels. Of this variety he reports three cases. With perfect propriety, there may be placed in this category the floating kidney due to a congenital long mesonephron. The following is an illustration of this variety. I was called to operate for an extrauterine pregnancy and found deep in the pelvis a large mass closely applied to the side of the uterus. Under an anesthetic, I was able to diagnose a two months uterine pregnancy and found in the pelvis a wedged-in, large kidney. After some manipulation, I was able to move the mass from the pelvis into the lower abdomen, recognized a floating kidney, which was without much difficulty put into its proper position. It was held there until after normal labor. Dr. E. W. Saunders attended the patient during her confinement. Another congenital variety is the horseshoe kidney; the lower poles may be fused, joined by a mass of renal tissue, lying across the lumbar part of the vertebral column, or displaced downward; they may be completely united, forming one disc-like mass, from which two ureters descend. In Gray's (DaCosta's) Anatomy, we read: "One or both kidneys may be misplaced congenitally and remain fixed in their abnormal positions. They are often misshapen. They may be situated higher or lower than normally or removed further from the spine than usual or may be displaced into the iliac fossa, over the sacro-iliac joint, on the promontory of the sacrum or into the pelvis between rectum and bladder or by the side of the uterus. Movable kidney cannot be distinguished from floating kidney with certainty until the kidney is exposed by incision. When

a displaced kidney becomes fixed, it is known as a dislocated or dystopic kidney."

In Watson-Cunningham's latest book on Genito-Urinary Diseases (Vol. 2), "Keyes tabulates the cases of abnormality of the kidneys which are mentioned in Morris' book with reference to the relative frequency with which the different forms of them occur, as follows:

Horseshoe kidney	16
Congenital uni-lateral atrophy.....	11
Misplaced kidneys	10
Lobulated kidneys, 4 bilateral.....	9
Malformed kidneys (bilateral).....	6
Fused kidney	1
	—
	53

These cases occurred in 11,168 postmortem examinations." They classify abnormalities of the kidneys under the three headings:

1. Abnormalities of position.
2. Abnormalities of form.
3. Abnormalities of number.

(1) Under the first head, one instance is given in which both kidneys are reported to have been misplaced. The case is reported by Potherat. The two organs lay upon the brim of the pelvis. Acquired displacements. These are the so-called movable kidneys which become attached in abnormal places by inflammatory changes in the peri-renal tissue.

(2) Abnormalities of form. These are classified by Morris as follows: a, Variations in size; b, malformation of one or both kidneys without any junction or fusion of the organs.

“(3) Fusion of the two kidneys, either in the form of a “horseshoe” kidney or some other irregular-shaped mass. The most important of the former class is congenital atrophy, because of its frequency as compared with any other of these deformities and owing to the failure of functional activity and efficiency involved in the condition, which may make nephrectomy impossible. Of class b, the lobulated kidney is the most frequent example. “Associated abnormalities of the blood vessels are the most essential thing to remember in connection with this sort of malformation, for they are common and may be a source of danger, when nephrotomy, nephrolithotomy or nephrectomy are performed.”

3. Abnormalities of number. A. Single or unsymmetrical kidney, where one is entirely absent. B. Solitary or fused kidney, where the two are massed together. C. Imperfect development or atrophy of one kidney. D. Absence of both kidneys. E. Supernumerary kidneys.—Associated abnormalities. These are defects of the genital organs. In the male, the absence of the vas deferens, vesicula seminalis, ejaculatory duct; complete absence of the testis of the same side has been observed.

In the female, bifid uterus, duplication of the vagina, unicorn uterus, absence of the Fallopian tube, absence of the ovary, have all been reported.

Ransohoff, in his article on the kidneys and ureters in Keen's Surgery, 4th Vol., says: "Anomalies of position, form and number of the kidneys and ureters, which until recently possessed only scientific interest, are far from rare. Aristotle knew that life is compatible with one kidney. Instances of congenital absence of one kidney were described by Vesalius, Eustachius, Baubin and Haller. Congenital abnormalities may be divided into three groups; 1st, abnormalities of number; 2nd, abnormalities of form; and 3rd, abnormalities of position."

I have permitted myself to give this brief account of the abnormalities of the kidney by notable authorities, in order to throw into strong relief the case, which is the subject of this report and which seems to me to occupy a place *sui generis*.

The history of the case, as written by Dr. Robertson, in whose care the patient was, reads as follows: Mrs. Ch. R., jr., 20, married, born in the United States, came under my observation April 1st, 1908. Family history negative. Personal history; chicken pox, diphtheria, tonsillitis, left femoral hernia, menstruation scant and delayed. Married, June, 1907.

Present illness. Patient has always been in the best of health, with the exception of the above named diseases and what she designates as three attacks. The first attack occurred in July, 1907, and lasted three weeks; the second in September, 1907, lasting five weeks, and the third in February, 1908, lasting six weeks. These attacks came on suddenly without any premonitory symptoms, in the form of violent pain in the abdomen just left of the umbilicus. For two or three hours the pain was excruciating or, as she expressed it, so severe that she did not know what she was doing. It gradually diminished and a general pain and sensitiveness over the entire abdomen remained for several weeks, confining the patient to bed for a period of from three to six weeks. There was always nausea, sometimes vomiting and sometimes diarrhea. April 1st, 1908, when I first saw the patient, she was recovering from an attack of six weeks' duration. After a careful physical examination, the only thing found was an area the size of a man's hand, just below and to the left of the umbilicus. This area was painful on pressure and manipulation caused a feeling of nausea. There was rigidity of the left rectus muscle, but nothing abnormal could be detected in the abdomen. The patient's general condition was good and she was rapidly regaining her flesh and strength. The urine, which was frequently examined between April 1st and May 1st, always showed the following result: Cloudy, acid, specific gravity 1018, small amount of albumin, no sugar; microscopically, much pus, epithelium, and swarms of bacteria.

May 3rd. Double ureteral catheterization was made.

Phloridzine 0.01 injected hypodermatically.

Right Kidney.	Left Kidney.	Mixed.
Sugar reaction; 15 minutes; slightly red due to traumatism from catheter.	40 Minutes; faint, very pale, cloudy, resembling dirty water.	Cloudy.
Albumin, slight trace.	Albumin, marked.	Albumin, trace.
Blood.	None.	None.
Acid.	Neutral.	Acid.
Spec. Gr. 1024.	Spec. Grav. ?	Spec. Gr. 1018.
Micro. Ex. Red blood cells.	Micro. Ex. Much pus, swarms of bacteria.	Micro. Ex. Much pus, and bacteria.
Sugar 2½%.	Sugar 0.2%.	
Amount secured five times that of left.		

Patient saw Dr. Tuholske in consultation, late last spring. Physical examination revealed pelvic organs normal, nothing definite found in abdomen. Further observation advised.

X-ray picture taken by Dr. H. T. Wells showed nothing abnormal. The patient remained entirely well and free from any disturbance until October 27 when she again had a recurrence of pain at the same location. The pain was not severe and continuous, lasting only two days; a small swelling could be detected at a point where the pain had always been most intense. The swelling disappeared with the pain; at the same time the urine became very foul and contained a large quantity of thick stringy pus. An immediate operation was advised and the patient was operated on by Dr. Tuholske on November 18th.

Operation. Objects, exploration of the abdomen at the place of the recurring pain and examination of the left kidney, which, because of the findings in the examinations related, was believed to be in an advanced state of pyonephrosis.

Ether anesthesia. Incision 4½ inches long through the left rectus muscle, beginning an inch above the umbilicus. On opening the peritoneal cavity, many loops of small intestine presented, of pinkish color, very vascular, highly injected, no exudate, no matting of small intestines, no adhesions. Having protected the small intestine with gauze pads, I passed my hand to the left along the parietes, leaving the descending and sigmoid colon to the right found the kidney pouch empty, spleen in normal condition, small, readily recognized by its sharp margin and fissures. Exploration of the right side demonstrated absence of the right kidney from its usual location, liver not enlarged, gall bladder normal. After much searching, the right kidney was found lying upon the right lumbar vertebræ, partially upon the bodies,

partially upon the transverse processes, normal in size, no compensatory hypertrophy, one ureter. Further search for the other kidney seemed fruitless. The examination, however, had shown two ureteral openings in the bladder. The right kidney had but one ureter. A kidney may have several ureters, which may singly empty into the bladder, or may coalesce, fuse and open by one opening into the bladder; a single ureter, starting from the kidney as such, never bifurcates. There was, therefore, somewhere, another kidney. Turning the small intestine out of the cavity to the left, we traced the mesentery to its root, extending from the left side of the second lumbar vertebra, across the vertebral column to the right iliac fossa. On palpating along the root of the mesentery and the vertebral column, I thought I felt, upon the third and fourth lumbar vertebræ, just to the left of the median line, a rather narrow mass, over which the peritoneum was movable, perhaps about three inches in length, which felt like a sac or pouch, empty and drawn out. I incised the peritoneum over it to the extent of four inches, dissected back the anterior layer of the mesentery and found the empty sac, which we thought was the kidney. It was carefully peeled out by dry gauze dissection. The ureter was small and traced a short distance; the renal artery proved to be not a branch of the aorta but of the common iliac artery; there was little bleeding, the pedicle was ligated and severed. The sac then still held by two tubular prolongations on the upper side. They were traced until they appeared lost in the perirenal tissue; they were then cut off after clamping and ligating them. We then attempted, in view of the demonstrated infection of the sac, to drain retroperitoneally through the kidney pouch. It proved impossible. A split rubber tube of large caliber carrying a gauze drain was then inserted into the retro-peritoneal space as far as possible, and then carried to the parietes transperitoneally. To atone for this, we sewed the peritoneum over the drainage tube, making a closed peritoneal canal around the retro-peritoneal drain, and drained the adjacent territory by cigarette drain. The appendix, being found diseased, was removed through the original incision, which was then completely closed in the usual way.

Examination of specimen proved it to be an empty misshapen sac. The ureter and vessels could be readily distinguished. The sac was then cut open; there was no semblance of any kidney structure; it looked like the pale, gray, mucous membrane of the esophagus. The two tubular prolongations, in reality kidney lobules, communicated with the sac. Microscopic examination from immediately made frozen sections by Dr. Rotter, one of the hospital internes, showed distinct glomeruli, and settled every doubt as to the renal nature of the sac. Our assistant, Dr. Sandperl, also made a number of sections, in which Malpighian bodies were found. I examined the specimens and finally submitted them to Prof. Tiedemann, the pathologist of Washington University, who verified our macroscopic and microscopic findings.

The post-operative history presents some points of interest. Quantity of urine averaging 30 oz. per day; temperature and pulse fairly normal; patient bright and comfortable; so far no evidence of a constitutional effect of the absence of the internal kidney secretion. On the third day after the operation, patient had a chill and rise of temperature to 104 degrees, and pulse of 138; no peritonism, nausea, or abdominal distention. An examination showed the drainage tube too large for the opening in the parietes; the margins of the drain hole were necrotic. The tube was removed and a strip of iodoform gauze put to the bottom of the formed canal. No other trouble followed; temperature and pulse and general condition became normal within two days. There is considerable watery, flocculent drainage; fluid collected will separate into a super-incumbent clear fluid and a sediment, fibrous and purulent. The fluid has no urinous odor. If it be urine, it must come of some small remains of the lobules, remaining after the ligation and removal of the sac. It is small in quantity and will most likely stop soon.*

We dealt, then, with two dystopic kidneys, one of which occupied a most unusual location, one of the kidneys showing the embryonic lobulation, and besides that, congenital atrophy and abnormal vascular arrangement. The site from which it was removed, practically from between the two layers of the radix mesenterii, is unique.

465 North Taylor Avenue.

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*Addendum. Patient discharged well January 30th.

RECENT EXPERIENCES IN THE TREATMENT OF UTERINE
CANCER; WITH REVIEW OF 41 CASES
AND 27 OPERATIONS.

By FRED J. TAUSSIG, M. D., of St. Louis.

During the past four years I have had under my personal charge in private work and at the St. Louis Skin and Cancer Hospital forty-one cases of uterine cancer. Twenty-seven of them I operated on, and almost all the balance underwent some form of operative treatment at other hands before coming to me. I realize that compared to the large European clinics these are but meagre figures, nor do I want to do more than emphasize certain special points as illustrated by my experiences.

The essential in obtaining a large percentage of cures is early diagnosis. Special attention was paid to this point in taking histories to see first of all how long an interval elapsed between the onset of the first symptoms and the date of the first consultation; secondly, how many doctors failed to examine the patients at such consultation; and, thirdly, how many failed to recommend immediate radical operation.

Who can question the necessity of trying to educate women regarding the early symptoms of uterine cancer when he hears that of the 32 patients concerning whom accurate data were at hand, there was on the average an interval of over 7 months from the onset of the first symptoms, until the time of the first medical consultation. Seven months during which the patient had a blood-tinged discharge, and was satisfied with the belief that it was "change of life," or "inflammation of the womb!" Only three times did the patient go to the doctor within the first week or two of suspicious symptoms, and in two of these three cases that other factor in delay—the physician—prevented the possibility of cure. One doctor did not examine the patient; the other failed to make the correct diagnosis, or, at any rate, did not advise operation. I find that ten of these women can, to a large extent, attribute their death to the neglect or ignorance of the attending physician. Here are a few samples:

One doctor treated the case for 10 weeks as an ulcer;

Four doctors failed to make an examination;

"Phenomenal" Kraus tried to cure one by his phenomenal methods;

A delay of 3 months after the diagnosis was made, is recorded against another.

Amputation of the cervix and currettement in two early cases undoubtedly permitted the opportunity of complete removal to slip by, and so resulted in rapid recurrence and ultimate death.

In contrast to this carelessness, one case seems especially worthy of praise both on the part of the patient and the physician. The history was as follows:

Mrs. R., age 36, a patient of Dr. A. D. Erwin, of Fidelity, Ill., had always menstruated regularly. Her menstruation in July, 1908, was, however, unusually profuse and was accompanied by some clots, and an increased leucorrhœa. Within two weeks of this time she went to Dr. Erwin and the latter made an examination. He found a reddened, slightly bleeding spot in one corner of the lacerated cervix, and suspecting the possibility of a carcinoma, brought her to town to see me. It required the microscopic examination of an excised piece positively to establish the diagnosis. A radical panhysterectomy was done and the examination of the pathologist showed that apparently the disease was still very superficial. The probability of cure in this case is very great, and must in a large measure be attributed to the watchfulness of the family physician.

How great is the neglect of both patient and family practitioner toward aiding the early recognition of cancer is again evidenced by the percentage of operable cases. Of the thirty-eight cases in my charge, only nine were operable, and operative indications were set so as to include any patient in whom there was the slightest chance of permanent relief. Of these nine, one was found to be really inoperable only after the operation was almost finished; two others refused operation, leaving six operable cases. As far as the parametral involvement was concerned those cases were still included as operable in which there was some mobility of the cervix, or where the finger could be passed between the cancerous infiltration and the pelvic wall. Out of twenty-three cases in which the location of the parametral involvement was accurately noted, I found both sides equally involved seven times, the right side more strongly in two, and the left side more strongly in 14 instances. This striking preponderance of left-sided involvement is probably to a certain extent chance but it would be interesting to note if other statistics showed a similar marked difference.

The importance of cystoscopy in determining the question of operability was brought out by Zangemeister and others. Such a cystoscopic examination was made in fifteen patients. In almost half of them, there were found direct outgrowths of carcinoma in the base of the bladder. In a few I found the typical formation of folds and pockets at the point of beginning cancerous invasion due to the fixation of the bladder mucosa at these places. In the remaining the cystoscopic picture was normal. The bullous oedema described by some writers I was unable to see in my series. Once I found folds cystoscopically but I decided to do a radical operation in spite of this fact. On dissecting between bladder and uterus I found the muscular coat firmly adherent and finally had to resect a portion of the bladder wall before completing the operation. The value of cystoscopic examinations has in the

past few months been again emphasized in the review of seventy-five cases by Hannes.

I will not repeat my reasons for preferring the Wertheim panhysterectomy in cases of cancer of the cervix. They were presented in a paper read before the St. Louis Medical Society six years ago (Nov. 27, 1902).

At that time little, if anything, was known of the operation in St. Louis. It has been with considerable satisfaction that as a pupil of Prof. Wertheim, and an enthusiastic supporter of the operation, I have watched the progress the operation has made here since that time. Besides my own work (Figs. 1 and 2), it has been my privilege to assist a number of surgeons and thus to demonstrate points in the technique to them. The evidence of the past six years from Wertheim's clinic, now reaching a total of over four hundred operative cases, corroborated by almost all the large clinics of Europe, is strongly in favor of this operation.

Of the seven patients upon whom I performed the Wertheim operation, two died. One of these was the case already mentioned in which I had to cut through cancerous tissue in order to complete the hysterectomy. This was an inoperable case and can hardly be laid against the operation, but rather against the operator in trying to go too far in his operative indications. The patient died of sepsis on the fifth day, the infection doubtless spreading from the cancer itself. In self defense I only wish to add that the pitiable existence of these cancer patients leads one to go to any extreme for a possible cure. The other mortality can be more rightly attributed to the operation, although it was one of those accidents that might occur with any protracted anesthesia. The operation was a most difficult one involving a resection of the base of the bladder, and one ureter in a woman weighing close to three hundred pounds (Fig. 3). The operation lasted two hours and forty-five minutes, the patient being in the Trendelenburg position most of that time. The evening of the operation a hemiplegia was noted, which persisted and was accompanied by localized necrosis in the skin of the affected side. Dr. W. W. Graves, who was kind enough to examine the patient for me, on the fifth day after operation made a diagnosis of thrombosis in the internal capsule. Locally, in spite of the bladder plastic, there were no signs of peritonitis or urine leakage. The patient sat up out of bed for a short time on the tenth and eleventh day, but on the twelfth day incontinence of feces and urine of central origin developed and on the fourteenth day she rather suddenly died. No general autopsy was allowed but locally in the pelvis the ureter and bladder were found well healed with no evidence of suppuration. The death, therefore, was caused solely by the cerebral complications. The three factors, prolonged narcosis, Trendelenburg posture, and unusual obesity, contributed to the occurrence of this extremely rare complication. To my knowledge no other such hemiplegia following this form of panhysterectomy has been reported.

Of late I have preferred not to expose the ureter as the first step in the operation but only after tying off both ovarian arteries, and cutting



Figure 1.—(Private Case.) Early cancer of the cervix showing extensive removal of cellular tissue, especially on the right side (left side of picture). The ureter in this case lay in the groove between the uterine vein (short) and uterine artery (long). Diagnosis could be made positively only by the microscope. Operation Dec. 16, 1908. Recovery.

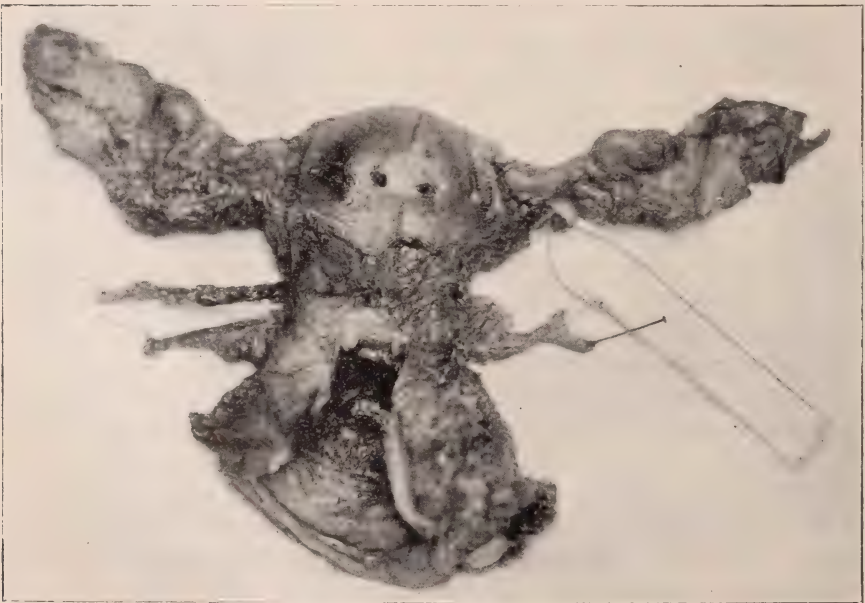


Figure 2.—(Skin and Cancer Hospital.) Advanced cancer of the cervix with beginning infiltration of left parametrium. Extensive removal of cellular tissue and enlarged iliac lymph-glands on left side. A piece has been cut away to show ulcerated cervical crater, previously excochleated. Operation October 16, 1908. Recovery.

down to the clear space in the broad ligament. Special care must be taken not to denude the ureter of its coat of nutrient blood vessels for fear of subsequent necrosis. In one of my cases such a ureteral necrosis with resulting fistula developed on the ninth day and persisted in spite of treatment so that I finally advised a nephrectomy for its relief. The fistula, however, closed spontaneously $3\frac{1}{2}$ months after operation. Weibel, of Wertheim's clinic, reports such a late spontaneous closure as not at all rare. Out of four hundred cases he found that ureteral necrosis developed twenty-four times, or in six per cent. of the total number. Practically all, he says, healed spontaneously between the third and twelfth week. My patient, by the way, an old woman of 72 years, who had had cancer for two years before operation, is now (over two and one-half years after the operation) (Fig. 4) still free from any recurrence.

At the meeting of the American Gynecological Society at Washington one year ago, I presented arguments against the routine removal of both ovaries in cancer of the cervix where the patient is under 40 years old. Most operators would pursue such a course in uterine fibroids. Why should it be different in cervical cancer? An exhaustive review of the literature showed that out of the many thousands of operable cases no case in which the ovary was involved could be found. My theoretical conviction on this subject found practical application in a case operated three months ago, a beginning carcinoma in a woman 36 years old. I found that leaving one ovary did not in any way interfere with the technique of the Wertheim operation. The cellular tissue could be removed just as well and my patient has had no such premature menopause disturbances as might otherwise have resulted. There is as much reason to remove the appendix in every such case as the ovary and the latter at least serves some useful function.

Oozing is one of the most disagreeable of the operative difficulties encountered. It often delays the operation and yet, if not checked, predisposes to septic infection. Such cases I believe had better be drained. For a time some operators preferred not to drain. But where the possibility of a ureteral necrosis is present in almost any case, it would seem safer as a rule not to close the vagina entirely. At a recent German gynecological meeting a report from Bumm's clinic in the Charité of Berlin showed that they were again draining all their cases.

In the after treatment of the cases I will only take up one point, that of post-operative urine retention with resulting cystitis. This subject is one I made the occasion of a special Arbeit while an assistant in Wertheim's Hospital in 1901. At that time we could find no relief for this harassing complication. To Dr. Emil Ries of Chicago, I believe, we owe the suggestion of getting patients out of bed early for the purpose of voiding urine. Where this is possible, it is almost invariably true that they can void without trouble. When catheterization has to be resorted to for several days, we cannot possibly depend solely upon asepsis

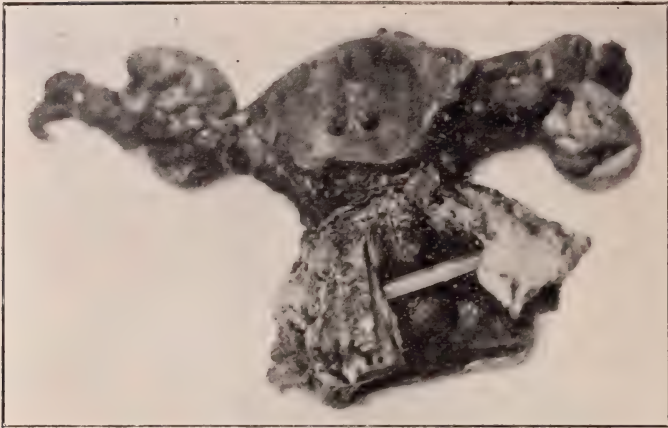


Figure 3.—(Skin and Cancer Hospital.) Very advanced cancer of cervix, involving muscular coat of bladder and both parametria. Cut open to show large crater. Bladder and right ureter resected. Operation July 30, 1908. Death from cerebral embolus on 14th day after operation.



Figure 4.—(Skin and Cancer Hospital.) Cancer of the cervix associated with fibroid of the fundus. Parametria free. Operation May 25, 1906. Ureteral necrosis fistula closed spontaneously. Patient recovered and is now still free from recurrence.

for the prevention of cystitis. Pyogenic bacteria are certain to get into the bladder and there proliferate unless antiseptics are employed. We can give Urotropin by mouth wherever the stomach will tolerate it. Boric acid irrigations of one pint after each catheterization have given good results, but of late I have preferred the daily instillation of 10 to 15 cc. of a 5 per cent. protargol, or 40 per cent. argyrol, solution as a prophylactic measure. The post operative cystitis, which formerly was one of the bug-bears of the radical abdominal operation, is therefore no longer to be dreaded. Not in every instance would I employ the abdominal operation however. In very fat women the extended vaginal operation is preferable. Cancer of the body must also be attacked from the vagina, since the mortality of a simple vaginal hysterectomy is a great deal lower than that of abdominal hysterectomy and the cellular tissue is rarely involved in this form of cancer. Two cases of adenocarcinoma of the body removed vaginally were among my number. They demonstrate the necessity of watching closely every case of endometritis in older women. I saw one patient at her home in consultation with Dr. Schuchat on October 10, 1907. She had entered the menopause two years previously, but in March, 1907, a persistent bleeding began which was only checked after two months by a thorough curettage. The microscopic examination at this time revealed no carcinoma. In September another attack of bleeding began and continued until my visit in October. I curetted and found positive evidences of adenocarcinoma in some of the pieces examined. Hysterectomy was recommended but it was not until January, 1908, that the patient agreed to have it done. During these three months the bleeding had ceased. On opening the uterus it was found that the adenocarcinoma was limited to a small polyp in the fundus (Fig. 5). On re-examination, October 26, 1908, 10 months later, the patient was free from recurrence. The question whether occasionally an adenocarcinoma of the body can be cured by curettement as suggested by Vassiner three years ago, might fairly be raised in this case. I do not wish to be understood as recommending curettement, only it is of interest to note how long the disease may be localized entirely to the mucosa. And yet it is never possible to say just when metastasis even to distant organs may take place in these early adenocarcinomata of the body. I recall an autopsy in Vienna in which just such a small polyp was associated with diffuse peritoneal carcinosis. And this year I saw in consultation a patient in whom beginning cancer of the body was attended with a much larger metastasis in the bladder.

In six of the cases in this series the cancer was recurrent after hysterectomy. Four patients were clearly in a hopeless condition, when seen by me. One, referred to me by Dr. Kelly, of Baltimore, had just recovered from a secondary laparotomy done by him in which the affected carcinomatous lymph glands were found closely adherent to the iliac veins and their removal consequently abandoned. In this list also belongs a patient whom Dr. Gellhorn had operated on by the abdominal



Figure 5.—(Private Case.) Early adeno-carcinoma of the fundus removed by vaginal hysterectomy. Operation January 14, 1908. Recovery. A bit of paper is slipped under the carcinomatous polyp in the fundus.



Figure 6.—(Skin and Cancer Hospital.) Autopsy specimen of an inoperable cancer of the cervix, showing hydronephrosis and hydro-ureter of one side, and almost normal kidney on the other. Almost the entire bladder and half of the vagina is cut away, showing cancerous crater involving entire uterus. The short line to the right represents point of entrance of the ureter into this crater (uretero-vaginal fistula). The longer line to the left represents the remaining portion of the bladder.

method in November, 1906. The patient was kept under constant observation and eight months later, during Dr. Gellhorn's absence from the city, I felt a suspicious mass, the size of a walnut, in the region of the left internal iliac vessels. A week later I did an exploratory secondary operation. Since there were, beside this mass of glands on the left side, a nodule the size of an acorn in the right sacral region and an enlarged gland at the point of division of the aorta, I desisted from any attempt at operative removal. The patient gained fifteen pounds in weight after this laparotomy but finally died nine months later.

So many of my cases were inoperable, that I had better opportunity to test the various palliative measures than the more radical procedures. Of x-ray treatment and the trypsin treatment a trial was made in a series of cases but except for occasional suggestive benefit I could see no improvement. Beside this, three methods of treatment were employed:

- (1) Curettement alone.
- (2) Curettement and thermo-cauterization.
- (3) Curettement and acetone treatment.

Curettement alone gives only the most temporary relief. When the base of the growth is thoroughly cauterized results seems to be better. Some surgeons, Lomer for instance, found cases that were practically held in abeyance by such repeated thermo-cauterizations. Personally I found that the necrotic zone thus formed gave rise invariably to a moderate degree of infection, and when the dead tissue was cast off, there lay beneath it a granulating, usually freely bleeding, surface. The discharge was often very profuse after such operations. The best results by a good deal were obtained by the use of acetone. I took up this method with a feeling of skepticism, fearing that it too would fail as others had done. I believe we owe a great deal to Dr. Gellhorn for having suggested this method. I feel sure that in the next few years it will become the generally accepted palliative treatment. It alleviates to a very great extent the bleeding and offensive discharge and inasmuch as the pain is occasionally due to an associated septic infection it will at times help the pain. I do not find that it materially retards the inward growth of the cancer. What it does is to limit the amount of superficial necrosis and bleeding. Out of fourteen patients on whom I could try this method for some time, six were greatly benefited and three slightly benefited. Of the remaining five in whom no improvement took place three were almost moribund, that is, they died within one month of the first time the treatment was tried. Most patients should not have acetone treatments at too short intervals. Treatments every 3 to 4 days seem to give the best results. Extreme care must be taken not to get even a drop of the acetone on the external genitals, as it causes the most intense burning which often does not subside for hours.

Of the later complications of inoperable carcinoma one of the most annoying is the occurrence of vesico-vaginal and uretero-vaginal fistulæ.

In the present series there were five such cases. In no instance did a recto-vaginal fistula develop. Nothing in the way of treatment can be employed to stop the urinary incontinence. In the opposite condition of urine retention through pressure of the cancerous mass, we occasionally have to do palliative operations. Of the three instances of such urethral involvement, I operated upon two. In one patient, I was compelled to cauterize a large hole in the bladder to permit the urine to escape. The patient died some time later of an ascending urinary infection. The other patient I operated on three weeks ago. She was referred to me by Dr. Chapman of Charleston, Mo., with the history that for the past five weeks she had to be catheterized three times a day. I found an inoperable cervical cancer with a metastasis on the anterior vaginal wall compressing the urethra. A plastic with the removal of half of the urethra and the larger part of the vaginal metastasis resulted favorably. She can now void urine freely and with good control. I do not anticipate, however, that the operation will give more than temporary relief.

With such a large percentage of inoperable cases it is not surprising that over one-half are to my certain knowledge now dead. In thirteen of these patients who died, the exact date of onset of the first symptoms could be learned. From this it appears that the average duration of this disease, where treated only by palliative measures, is one year and seven months. The patient who lived longest was a woman who two years ago, when Prof. Wertheim was in this city, was examined by him at my request, with a view to a radical operation. The doctor found beginning involvement of the left iliac glands and advised against operation. She died only one month ago, or two years after being declared hopelessly inoperable and four years after the onset of the disease.

A word in conclusion about the six autopsies performed on my cases by Dr. McConnell at the Skin and Cancer Hospital. As nearly as one could tell four died from urinary obstruction (see Fig. 6) and two from general debility. Metastases in other organs found only once, in the lung and the liver. As to the lymphatics, in three no involvement was found outside the pelvis, in two the aortic and inguinal glands were involved, and in one the inguinal glands alone. Only enlarged lymph nodes were examined.

To emphasize once more: The blame for the late recognition of uterine cancer rests mostly on the woman herself. In about ninety per cent. of the cases she did not at once consult a physician. In about one-third of the cases the carelessness and ignorance of the physician was partly or wholly responsible for the delay.

Only about 20 per cent. of my cases were operable.

The cystoscope is a valuable aid in determining the question of operability.

The radical panhysterectomy of Wertheim is the best operation for cervical cancer, except in fat women.

Ureteral fistulæ due to necrosis will usually heal spontaneously.

Post-operative cystitis can usually be prevented by getting patients up early.

Of palliative methods the best, as tested in fourteen cases, is the acetone treatment after excochleation.

Urethral compression in the late stages sometimes necessitates operative relief.

Death occurs on an average about one year and seven months after the onset of first symptoms.

The autopsies show the most frequent cause of death to be uremia due to ureteral compression.

REMARKS ON ATHLETICS FOR HEALTH.

By G. FRANK LYDSTON, M. D.,Professor of Genito-Urinary Surgery, University of Illinois, Chicago.

There has been a decided tendency on the part of the profession of recent years to condemn athletics as injurious: Benjamin Ward Richardson long ago called attention to the results of over-strain: His observations on what is now familiar as myocarditis have become a classic. As is usual with the profession it has gone to extremes in condemnation.

Although in many instances athletics have proven injurious, there is no justice in the growing popular sentiment that they are generally dangerous. The only source of danger lies in the fallacious and pernicious notion that athletics consists of mere muscle-building and preparation for severe competitive strain. The man who absurdly trains for the purpose of cultivating an enormous muscular development has no conception of the true function of physical culture and usually injures himself in greater or less degree. The fact that some such foolish ones live to advanced age does not controvert this. Aside from the question of injury, what sense is there in the performance of the man of hypertrophied muscle, whose claims to athletic accomplishment consist in his mere ability to put up a dumb bell of 150 pounds weight with either hand? Let a man of this sort enter the lists for a contest involving endurance and agility and he is but a weakling; more than this, he is likely to die years before his time. I remember a remark made by my old gymnastic teacher, Prof. Wood of New York, that well expressed the situation. Pointing to a plaster cast of an enormous biceps that hung upon the wall, the veteran trainer said: "That arm cost its owner his life. Man is not a horse, he was not made for the work that is necessary to develop such muscles." That Sandow has thus far proved an exception to the rule the whole world knows.

It is a fact well known to athletes, that a man with large bunched muscles—usually cultivated by heavy work on the various gymnasium apparatus—is invariably joint and muscle-bound. Give an expert boxer or wrestler his choice of opponents for a match, and he will select the strong, heavy and bunched-muscled man, with perfect confidence that his own smooth, well-laid muscle and hardy fiber will win. To the non-expert the man with the hypertrophied muscle appears a sure winner. The recent wrestling match between Gotch and Hackenschmidt for the world's championship was a splendid illustration of my point. "Hack," of the horse muscle, was worn out by the suppler-muscled Gotch.

The varieties of athletic exercise may best be divided into two principal classes, viz.: (1), those which are conducive to muscular develop-

ment and the acquirement of strength; (2), those which tend chiefly to improve the quality of muscle fiber and the acquirement of endurance and agility. One class of exercise increases bulk and the other improves quality. The proportion of each required by the athlete varies greatly with the individual. Obviously, it would be absurd to prescribe the same line of work to a slender man of 130 pounds weight, as to a well-muscled subject weighing 180 pounds. Short-limbed and long-limbed men require different training. Much depends upon the requirements of each case; the several indications in different cases being:

1st. Muscle development, general or specialized; *i. e.*, general in or only specialized in those whose entire muscular development is defective; general and specialized in those whose bodies are asymmetrically developed.

2nd. Increase in weight.

3rd. Decrease of weight and acquirement of agility and endurance.

4th. Increase of pulmonary capacity.

Every beginner should have the advice of an expert as to the amount and character of exercise necessary. It would be impossible for me at this juncture to do more than hint at the several indications. In a general way the rule should be that all exercise should fall short of fatigue. An exhausted muscle is a weakened muscle, and incidentally, the nervous system becomes exhausted and necessarily irritable. Cheerful companionship is essential—athletics for health must not be converted into hard work. The man who wishes to obtain the best results from the gymnasium must play boy for the nonce. Exercise just before or after a meal should be avoided. Special effort should be made to induce perspiration, especially if the subject be fat and plethoric. Thin and spare subjects can accomplish this by drinking hot water during exercise; fat persons should avoid fluids and swathe themselves in heavy clothing or a "sweater."

A good system for the average amateur is the following: An hour is allotted for the work and divided as follows, *viz.*: (1) Ten minutes for the dumb bells and clubs, the former weighing from $1\frac{1}{2}$ to 8 pounds—the lighter the better—and the latter from 2 to 5 pounds. (2) Three minutes rest, during which the subject should walk about the room to avoid chilling. (3) Five minutes with light pulleys. (4) One minute rest. (5) Five minutes upon the rowing machine. (6) One minute rest. (7) Five minutes with the wrist pulley. (8) One minute rest. (9) Five minutes with the ladders, taking great care not to over strain. (10) Five minutes rest. (11) Five minutes with the suspended rings or horizontal bar. (12) Finish the hour by boxing, fencing, running, wrestling or hand-ball, as the opportunity offers. (13) A cold sponge or shower-bath while perspiring freely, followed by a brisk toweling.

Fat subjects should train down by worrying play rather than by muscular strain. Boxing, wrestling, fencing and hand-ball will worry off fat faster than anything I know of.

It would, of course, be impossible for the beginner to carry out such a plan as that prescribed: he should devote but a very short time to each exercise and take at least two months to work up to the amount of exercise outlined. A tepid bath and rub may be taken at first if the subject be weakly.

Persons with narrow, contracted chests should work chiefly with the bells and rings.

In a general way the best results will be obtained from exercise upon alternate days. Regularity is very essential. Strain against dead weight, as in lifting, should be avoided. Stimulants and tobacco are inimical to proper training. In a general way competitive feats are unwise—the primal object of training—health—should be kept in view. Pushing up heavy bells and lifting heavy weights hypertrophy and dilate the heart and cause pulmonary emphysema. The athlete who over-trains finds himself at 40 years of age unable to continue his hard training; as a consequence his big heart falls to disuse, and disuse means decay, *i. e.*, cardiac muscle degeneration.

The most powerful pugilist America ever produced—John Dwyer of Brooklyn—quit the squared circle and entered his brother's counting room as clerk. The lung of the prize ring was unnecessary at the desk; was placed in comparative rest, and degenerated, degeneration in this instance meaning phthisis and death within a year. Frank Glover, a mighty heavyweight, followed the same road.

Richardson was correct, when he spoke of "broken heart" from strain, as many a man has found to his cost—correct in more ways than one, for a valve may really snap under powerful exertion.

Athletics for health is safe. Athletics for prowess and superiority may be dangerous. It is to be hoped that the correct principles of training may be inculcated in the minds of the American youth—both boys and girls—with the result that the generation of fifty years hence will redeem the race. Athletics of a professional type may become scarce, because normally strong and powerful men will have ceased to be a novelty.

THE VALUE OF CONSERVATISM IN PELVIC SURGERY WHEN DEALING WITH PYOSALPINX.

By GORDON A. BEEDLE, M. D., of Kansas City, Mo.

In presenting a paper under the above title, I shall not attempt to embrace the associated etiology and pathology; but preferably shall present the advisability of removing pelvic organs found in company with commonly termed gonorrheal pus tubes demanding surgical relief.

First, the removal of the uterus; second, removal of the ovaries; third, plastic efforts at preservation of the tubes.

Eliminating the vaginal and urethral infection, I consider the uterine mucosa first becomes involved to various stages of degree; thus transmitting the infection to the tubes, which in turn may infect the ovary through proximity to a ruptured graffian follicle.

The endometritis in a great majority of cases has subsided by the time suppurations in the tubes occur; again there are cases which continue in chronic state varying in severity due frequently to interference of drainage through a cramped retro or antifixion or through more extensive infection of the mucosa. When the microorganism invades the tube there results a long irregular infected mucus sinus. This inflammatory process results in an early closure of the tubal ends and consequent impairment of drainage.

The varying extent of involvement coupled with position of uterus, previous impairment which the reproductive organs may have received, with general susceptibility or resisting power of the tissue may unquestionably account for the variance of symptoms that we meet: Such as pain, which varies greatly in grade of severity and frequency. Temperature and head pains are not always present; dysmenorrhœa and leucorrhœa may vary greatly in degree and amount, frequently the tubal process is active with no leucorrhœal discharge; possibly the less varying symptoms excluding the findings on examination are frequent attacks of pain in ovarian region often associated with clotted and increased menstrual flows—attacks becoming more frequent and painful.

The pus, in the majority of these cases when operated upon, has been found sterile. The tubal inflammation may extend from weeks to years. It may develop active stages and again become dormant for varying periods of time; the more persistent symptoms of pelvic inflammation are unquestionably due to disease of the Fallopian tubes.

In considering the removal of the uterus in all cases, let us review a few reasons for such advice as extended by a great many.

First, the uterus is of no farther use; second, the uterus may still be infected with resulting trouble; third, distressing menstrual symptoms following removal of tubes and ovaries; fourth, the possibility of the uterus becoming malignant; fifth, sexual life unaffected by removal of uterus; sixth, drainage is better when uterus is removed.

In agreeing to the first point, that the uterus is useless after the ovaries and tubes are removed, we take for granted the uterus has only one function, that of a receptacle for the development of the fetus; unquestionably, nature intended the maintenance of position of abdominal and pelvic organs through suspension, however, we must concede that to a great extent the suspension in general acts in unity and that counter pressure of one organ in proximity to another plays an important part.

Removal of the uterus leaves a space to be filled by sagging intestines pressing down upon the united peritoneal sac; thus, I believe the uterus if left in normal position through the additional aid of fixation or any advisable operation for such purpose, does materially assist in supporting its adjacent organs, lessening the danger of a sagging bowel or bladder wall.

It is doubtful if the uterus plays a part toward the enjoyment of coitus, while unquestionably it does not embrace the chief seat of sensation, it is certainly closely allied, as clinical evidence so frequently indicates. In a large per cent. of my cases of tubo-ovarian exsection without removing the uterus according to the statement of the patient, sexual intercourse has become more enjoyable. This, however, opens the question as to the true value of such statements made by these patients; I have in mind at least three cases of complete removal of the uterus, tubes and ovaries, each of whom claim positively that their sexual enjoyment has improved since their operation—one case of two years' standing and report of recent date. This may be due to retarded or gradual loss of sensation which in some cases require time to gradually efface, however, the majority of such cases under my observation have had an almost immediate loss of sexual desire.

The irregular returning of menstrual flow when the uterus is left in, may vary from an occasional slight discharge, regular or irregular in its cycle, to those coming frequently, associated with great pain and alarming in quantity of blood passed. Such a condition, I have on my hands at present, and clearly demonstrates misjudged conservatism in this particular instance. The remedy is easy but to be permitted to apply it, is not so easy. Had I removed the uterus when I removed the tubes and ovaries, the extra hazard associated with the operation and the other possible objectionable points that might ensue would have been a trifle compared with the relief of the present symptoms. Dilation, curettage, and general uterine treatment in these cases are generally discouraging.

Malignancy following in the unremoved uterus, I believe, is hardly an argument worthy of advancement, as clinical history has not demon-

strated any increased susceptibility of the uterus toward cancer after removal of the appendages. Such a condition can be easily conceivable, however, when an old infected organ with possibly extensive scar tissue resulting from old cervical lacerations with their well known irritating etiology, is left unremoved, the principle of removal of the uterus in all cases as a general procedure does away with the possibility of such a complication later, such a general procedure should be followed in all cases of advanced involvement. I doubt if any one would hesitate to include the removal of the uterus when the present symptoms demonstrate in addition to other findings an enlarged scarred cervix accompanied with a profuse leucorrhœal discharge, frequent increasing menstrual flows with present and past history of dysmenorrhœa, the past history of dysmenorrhœa frequently dating from puberty but becoming decidedly more aggravated since organ became infected, on section the uterus appearing enlarged and inflamed. Such a uterus unquestionably will continue to produce severe and distressing symptoms almost invariably yielding poorly to all lines of treatment and frequently made worse through repeated efforts with the curette.

Advantage of drainage with the uterus removed, I consider a minor point, drainage through the peritoneal cul-de-sac being as fully effective giving the advantage of gravity to the lowest dependent point.

The tubes unlike the uterus and ovary seem to possess the most desirable fertility for the development and maintenance of this type of infection, consequently receiving the greater degree of damage. A small lumen with inhibited drainage and increased tissue susceptibility to the microorganism, has placed the tubes chances for repair beyond physical help as a rule, long before the incision is made. Successful efforts at preservation in these cases are few and demonstration of their continued performance as transporters of the ovum much less frequent, while attempts at same in a great majority of cases have been failures; I believe there is only one safe way to deal with the same, that is extirpation or exsection of the entire tube including its origin in the uterine tissue.

I question if a great many of our unfavorable post operative symptoms placed to the credit of the remaining uterus are not due chiefly to the infected stump of the tubes remaining after the amputation method of removing same.

It has never appeared rational to me that old tubes containing pus could safely be reconstructed to properly perform their functions. We have no certain way of telling at operation the full extent of damage done the lumen, or the extent of structural deformity resulting if it should safely heal. Drainage of the tube through the vagina when the position of tube would facilitate same, and where enucleation would prove hazardous to the patient, seems to me the only proper time to leave such a tube with the patient. In case of the ovary associated with pus tube, as in all other cases excluding malignancy, one point which should bear decided consideration and not embracing the unquestionable

probability of the ovary being the true site of sexual appetite, is the theory of the value of the ovarian secretion. If the blood is enhanced by an important product through ovarian activity, which product if eliminated proves a great detriment to the nervous system than increased importance is added to the true surgical instinct of anatomical preservation, one ovary or a section of one should if possible be spared in every case, thus maintaining in a degree its internal secretion, however, as all degrees of ovarian involvement are seen in these cases from the lightly attached fimbriae to extensive adhesions, inflammation or suppuration but one consideration can guide the judgment, and that is our appreciation of the pathological extent through vision and touch while operating. The more accurate that judgment, the greater safety in attempted preservation.

Conservatism in these cases is always an increased responsibility on the surgeon, requiring a thorough painstaking diagnosis previous to operation and a clear appreciation of the extent of the disease when the abdomen is open.

The age of the woman, her mental attitude toward the knowledge of her lost organs with absence of their functions, the varying degree of nervous disturbance from a produced menopause extending from comparatively no disturbance to those of an advanced mental degree, and the possibility of unnecessarily forcing sacrifices upon the patient through misjudged radicalism, all have to be met for consideration if we abide by the dictum of general total extirpation.

Each case should be studied and handled independently upon its own merits. While many cases through their associated involvement of both ovaries and uterus being so extensively diseased that but one avenue is left to pursue, the great majority present that type chiefly confined to the Fallopian tubes, with the fimbriae glued to the ovary with occasionally one ovary more or less abscessed, the uterus but slightly enlarged with no special indication of present or previously apparent incurable state in such cases there seems every reason why we should preserve a portion if not one entire ovary and the uterus, after removal of the tubal sac at its origin in the uterine wall. (I have three such cases in mind at present—operated upon during the last year and results have been perfect according to their own expression, in each instance sexual pleasure has greatly improved, menstruation is normal, weight has increased, no neurotic symptoms present, but in every way presenting a normal physical condition.)

In addition I might say, while it is not within the scope of this paper to deal minutely with the various degrees of involvement we meet on opening the abdomen in these cases, I will say that by no means do all present an inviting task after the introduction of the exploring finger. There is a certain degree of restricted motility of the organs with a certain resistance of the adhesions which speak volumes at the first touch. The size of the abscess-sacs with their area of agglutination each

presenting an individual picture, while in general assuming similar characteristics.

I would refer briefly to a case which in my opinion represents that class of advanced involvement wherein enucleation should never be attempted.

Three years ago Mrs. R., presenting a history of gonorrheal infection, ten years previously, with repeated attacks of apparent localized peritonitis, suffering during those attacks with great pain in ovarian region. No chills and slight temperature. Attacks lasting from ten to twelve days, becoming more frequent and painful, urination and defecation painful, associated menstrual disorder. Up and around between attacks, however, never free from pain.

Examination.—Uterus outlined and slightly movable. Mass on either side with extreme tenderness on palpation. On opening abdomen found mass involving tubes and ovaries densely plastered low in pelvis, immovable extending from wall to wall, seemingly one united abscess. This was opened through the cul-de-sac, one hand remaining on mass in pelvis. Drainage into vagina through the opening in the cul-de-sac and the other hand compressing the walls within pelvis, I was able to explore the cavity which consisted of two departments with a partition part of the way down the center. Abdomen was closed by an assistant while I freely packed cavity and vagina. Patient continued to drain freely for about three weeks through large glass drain which I substituted for the gauze after its removal. Drainage gradually ceased after removal of tube and she was in apparent good health two years later. Since that time I have not heard from her.

I cite this case briefly, to bring out the point of the advantage of this procedure in such type of cases over the more radical effort of nucleation which if attempted would invariably hazard the life of the patient.

428 Altman Building.

THE APPARATUS USED BY THE GREEKS AND ROMANS IN THE SETTING OF FRACTURES AND THE REDUCTION OF DISLOCATIONS.

By JOHN S. MILNE, General Practitioner in Hartlepool (a smoky town
on the Northeast Coast of England).

(CONTINUED FROM JANUARY ISSUE.)

Hippocrates says that instead of the perineal extension band the upright perineal prop may be used.

Of dislocation inwards, Paulus Ægineta says that if it be not reduced after trying with the patient on his back and using the upright perineal prop:

"The erect piece of wood (Fig. 18) is to be removed, and two other pieces, i. e., the perineal prop of wood fixed on either side, like posts, not more than a foot in length, and let another piece of wood be adapted to them like the step of a ladder, so that the figure of the three pieces of wood may resemble the Greek letter H, the middle piece of wood being fixed a little below the tops.

Then, the man being laid on the sound side, we bring the sound leg between the posts, underneath the piece of wood corresponding to the step of a ladder, while the injured one is brought above it, so that the head of the thigh is upon it; but a folded garment is to be first wrapped about it to prevent the thigh from being bruised. Then another board of moderate breadth and of such a length as to extend from the head of the thigh to the ankle, is to be bound along the inner side of the thigh to the ankle.

Then extension being made, either by the pestles mentioned in treating of the dislocation of the vertebra or some such instrument, the leg is to be pulled downwards along the board which is fastened to it, so that by the force exerted on it the head of the thigh-bone may return to its proper place."

The Ambè. We have seen that in using the scamnum (Fig. 19) for the reduction of dislocation inwards of the thigh, Paulus Ægineta, (also Hippocrates, from whom Paul is copying), recommends us to fix a piece of board along the inside of the thigh and leg, to assist in levering the head of the bone into position. A board applied in this way was also used in reducing the dislocations of the shoulder, either by levering the board over the back of a chair or the lower half of a door, or by using it in conjunction with some specially constructed machine, such as that of Fabrus, with which we shall meet presently.



FIG. 18. The scamnum in dislocation inwards of the thigh. Counterextension maintained by the horizontal bar.

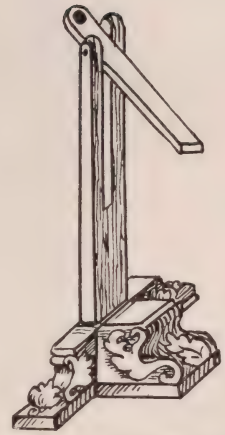


FIG. 19. Shows the ambé, fitted into a specially prepared upright supported on an ornamented base. After Scultetus.

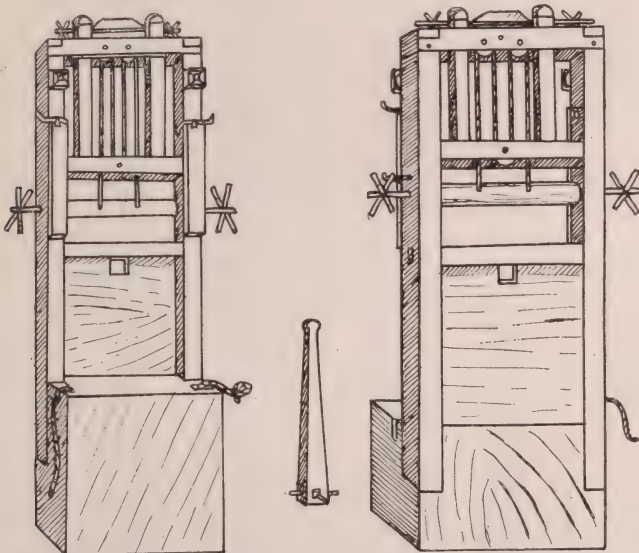


FIG. 19A. Anterior and posterior views of the machine of Fabrus. (After Vidius.) Between them is an ambé which has at its axillary end a bolt to fit into the top cross-bar of the machine.

The power varies only with the ratio of the diameter of the axle to length of crank. The pulleys do not multiply power.

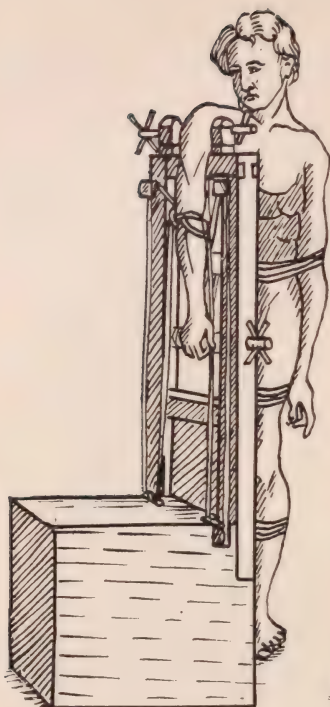
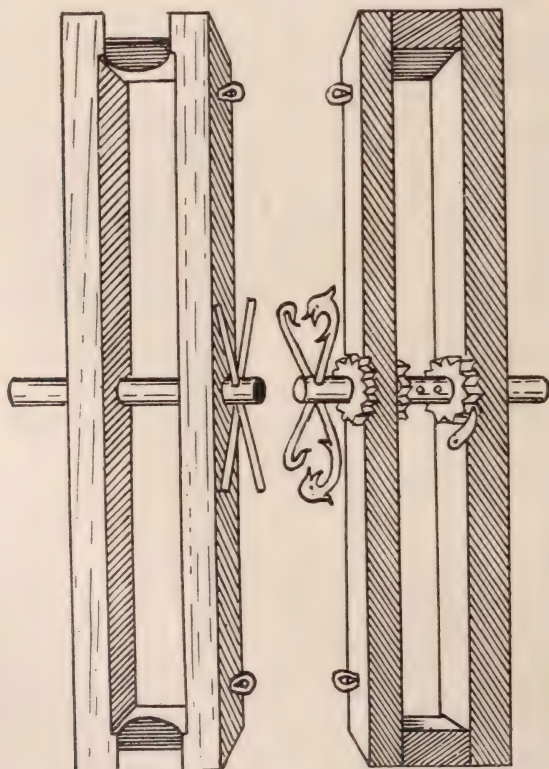


FIG. 20. Patient with arm arranged in the machine of Fabrus for reduction of dislocation of shoulder. The thongs from a clove hitch applied above the elbow are taken over two pulleys above and two pulleys below so that the clove hitch cannot move up nor down, and the elbow is thus maintained at the same level. (N. B. These thongs are not connected to the axle in any way.) Patient strapped so that he cannot resist the treatment.



FIG. 20A. Setting a fractured humerus in the manner described by Hippocrates. After Vidius.



FIGS. 21 AND 22. Portable winch, known as the plinthium of Nileus, for affixing to a ladder.

A board especially prepared for this purpose had a rounded enlargement on its extremity, to assist in pushing the head of the humerus outwards.

The name of this enlargement ($\acute{\alpha}\mu\beta\eta$) gradually became transferred to the whole instrument. The "ambè" was well known in England till well into the last century.

The time of its disappearance in England may be fixed by a passage in Adams' edition of Hippocrates (vol. ii, p. 575) where he says: "Of late years the ambè has fallen completely into disuse, and none of the various modifications of it are to be seen except in the cabinets of the curious." (This was in 1849.)

Scultetus shows us an ambè mounted in a specially prepared upright for use in the surgery (Fig. 19).

The ambè is thus described by Hippocrates:

"We must get a piece of wood five, or at least four, inches broad, two inches in thickness, or thinner, and two cubits in length, or a little less, and its extremity should be rounded, and made very narrow and very slender there, and it should have a slightly projecting edge ($\acute{\alpha}\mu\beta\eta$) on its round extremity—not on the part that is to meet the chest, but the head of the humerus.

"A piece of soft shawl should be glued to the end of the piece of wood so as to give the least pain on pressure.

"Having pushed the end of this piece of wood as far in as possible, between the ribs and the head of the humerus, the whole arm is to be stretched along this piece of wood, and is to be bound round at the arm, the forearm, and the wrist, so that it may be particularly well secured, but great pains should be taken that this piece of wood should be introduced as far into the armpit as possible, and that it is carried past the head of the humerus.

"Then a crossbeam is to be securely fixed between two pillars, and afterwards the arm, with the piece of wood attached to it, is to be brought over this crossbeam so that the arm may be on one side of it and the body on the other and then the arm with the piece of wood is to be forced down. The crossbeam is to be fixed so high that the rest of the body is raised on tiptoe.

"This is by far the most powerful method of effecting the reduction of the shoulder for thus one operates with the lever on the most approved principles."

Celsus (Bk. VII, ch. xv) describes the ambè thus:

"A wooden spattle is necessary if the body is rather big and the tendons are rather strong, and it should be of the thickness of two fingers and in length reach from the axilla to the fingers. And at the top of it there is a head rounded and gently hollowed out, so as to receive a part of the head of the humerus. In it there are two holes at three places separated from each other by an interval, and in these soft thongs are inserted.

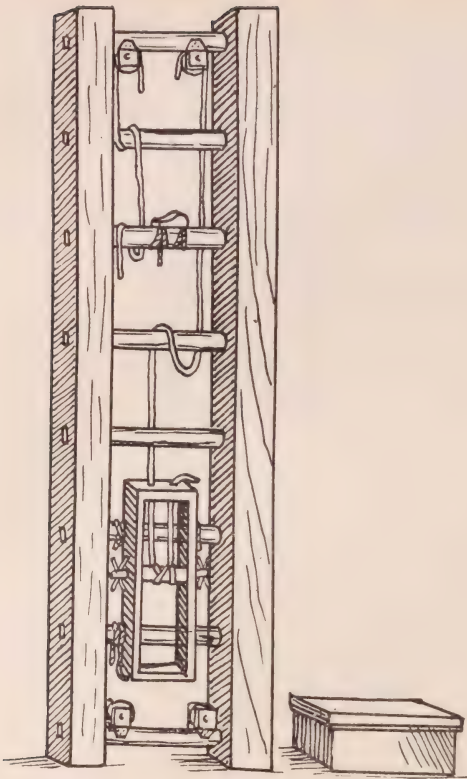


FIG. 24. Ladder arranged as a machine for the reduction of dislocations. A Plinthium of Nileus has been tied on the lower part of it and below this are two pulleys for the converting of the direction of extension. A similar pair of pulleys have been tied on the top step of the ladder.



FIG. 25. Reduction of shoulder by ladder with Plinthium of Nileus. Extension having been made, the operator is pulling out the head of the humerus by a thong. The assistant is bearing down on the patient's neck.

"This spattle, wound round with a bandage in order that it may not injure by contact, is so applied to the arm at the axilla that its upper end is put under the top of the axilla; then by its thongs it is bound to the arm, at one place a little below the head of the humerus, at another a little above the elbow, at a third above the hand—indeed the spaces and holes have been arranged for this purpose.

"The arm, tied in this manner, is passed over the step of a poultry ladder at such a height that the man cannot stand and while the body is let down on one side, the arm is made tense on the other, and thus it is brought about that the head of the humerus—impelled into position by the end of the board—is reduced, sometimes audibly, sometimes not so.

"Many other methods can be learnt by reading Hippocrates alone but not one has stood the test of experience better."

The Machine of Fabrus. Heliodorus describes the construction of this machine, and its application for the reduction of dislocations of the humerus. Probably it is a machine used by artisans for some such purpose as the elevation of large blocks of stone, as it seems unlikely that such a large and cumbrous machine should have been especially invented for the single purpose of reducing the dislocation of one joint. Two views of the machine are given, (Fig. 19A).

It consists, as will be seen, of two upright posts supported on a heavy base, while inside the posts a frame carrying two upright bars is raised and depressed by the rotation of an axle acting on a system of pulleys. Through the heads of the upright bars there passes another axle carrying a padded projection which is placed in the armpit.

The arm is strapped to an ambè in the manner described already and is passed over the axle, the patient standing on tiptoe outside the machine. (Fig. 20.)

The arm is maintained at one level by thongs affixed by a clove hitch above the elbow and passing over pulleys above and below. On rotating the lower axle the frame is pushed upwards, forcing the head of the bone into position, while at the same time an assistant forces the head of the bone outwards by a half turn of the upper axle, causing the padded projection to push outwards.

Extemporized Apparatus and Substitutes. Having now described the apparatus which was used by practitioners settled permanently in populous places, we may consider the substitutes for these which were used by surgeons on their travels, or under other circumstances where the major apparatus was unavailable.

Hippocrates says we must always be ready to make use of whatever happens to be at hand.

He says that dislocation inwards at the hip may be reduced in the following manner.

It is a good, proper and natural mode of procedure, and has something of display in it, if anyone take delight in such ostentatious methods.



FIG. 26. Reduction of the ulna.



FIG. 27. Reduction of both bones at the elbow

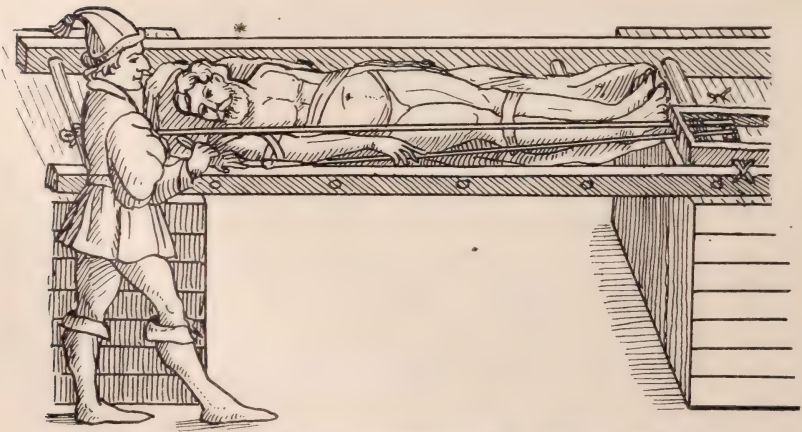


FIG. 28. Reduction of the shoulder with the ladder in the horizontal position. Operator pulling head of humerus outwards with a thong.

The patient is to be suspended from a crossbeam by the feet tied together by a strong, soft and broad cord.

The feet are to be about four inches or less from each other and a broad and soft leather collar also connected with the crossbeam, is to be put on above the knees, and the affected leg should be so extended as to be two inches higher than the other.

The head should be about two cubits from the ground and the arm should be stretched along the sides, and bound with something soft.

All these preparations should be made while he is lying on his back so that he may be suspended for as short a time as possible.

When the patient is suspended a person properly instructed and not weak, having introduced his arm between his thighs is to place his forearm between the perineum and the dislocated head of the femur, and then, having joined the other hand to the one thus passed through the thighs, he is to stand by the side of the suspended patient and suddenly suspend and swing himself in the air as perpendicularly as possible.

In fracture of the humerus, if the bone be set while the elbow is extended, the muscles of the arm will assume a different position when the elbow is flexed.

To set it in the flexed position, therefore, suspend a piece of wood like the handle of a spade from the roof by two chains one at each end.

Place the patient's arm over this, so that the bar lies in the axilla.

Over the flexed forearm pass a shawl to which attach a great weight, so as to produce extension on the lower fragment of the humerus and thus reduce the deformity.

Apply the waxed bandages and compresses in this position.

The Pestle. Of reduction of the shoulder by means of the pestle,—an article for the preparation of food to be found in every Greek home,—Hippocrates says:

"Those who accomplish the reduction by forcibly bending it over a pestle operate in a manner which is nearly natural. The pestle should be wrapped in a soft shawl for thus it will be less slippery.

"It should be forced between the ribs and the head of the humerus. And if the pestle be short the patient should be seated on something, so that his arm can with difficulty pass over the pestle.

"But, for the most part, the pestle should be longer, so that the patient, when standing, may be almost suspended by it. And then the arm and forearm should be stretched along the pestle while some person secures the opposite side of the body by throwing the arms round the neck near the clavicle."

Hesiod (*Works and Days*, 1, 421) says that the length of the culinary pestle was three cubits.

From other passages in Hippocrates it would seem that any pestle-like rod may be indicated. The word Celsus uses means a staff.

Hippocrates describes several methods of improvising a scamnum.

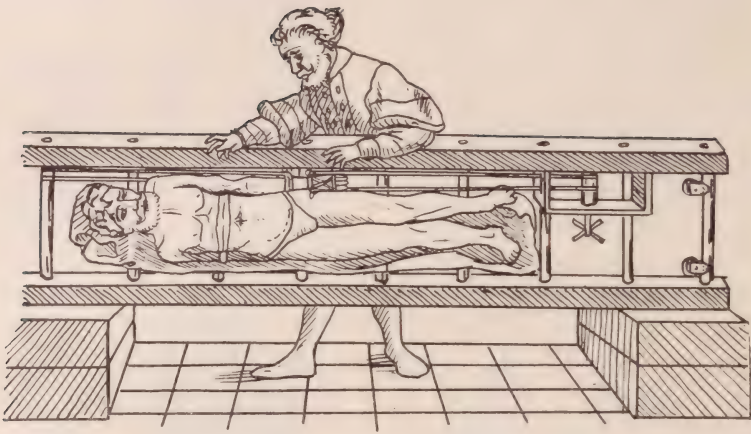


FIG. 29. Reduction of the wrist. The ladder is probably meant to be lying flat, but in the figure it is shown tilted up on its side in order to bring the parts into view.

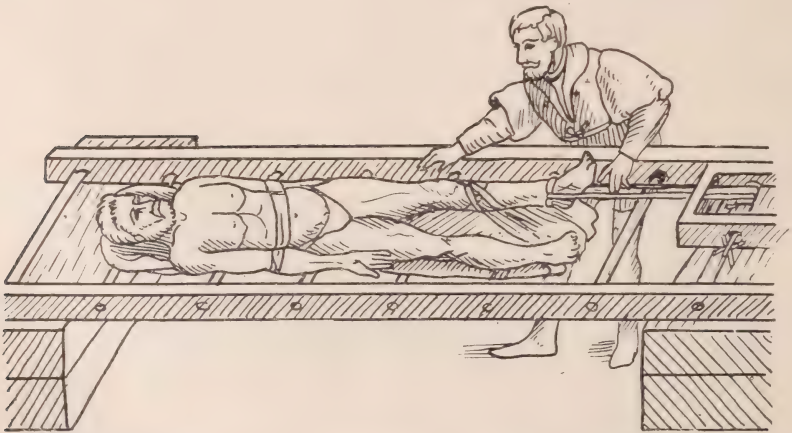


FIG. 30. Reduction of the dislocated astragalus with the ladder in the horizontal position.

Any strong couch may be used as the bench, and extension and counter-extension may be produced by poles levered against boards fixed to the feet of the couch, thongs being attached to the middle of the poles.

Or instead of boards attached to the feet of the couch a ladder may be placed below the couch and the poles levered against the steps of the ladder.

If along with either of these methods it were desired to extemporize a lever to press down a hump back, this could be done by driving a post into the ground alongside the couch and making a hole in the post for the end of the lever to play in.

Or the couch could be drawn alongside a wall and a hole made in the wall for the end of the lever.

In fracture-dislocation of the foot the extension might be made as follows:

Having fixed in the ground the nave of a wheel or some such object, something soft is to be bound round the foot.

Next, some soft thongs are to be attached to the foot and the ends of the thongs are to be fixed to a pestle or similar pole. The end of the pole is to be fixed in the nave.

On pulling back the pole, the foot is extended, while counter extension is made by pulling on the shoulders and the ham of the patient.

Or, counterextension can be made by driving a pole into the ground to act as a perineal support.

Ladder. A ladder was an object which was always at hand and of service in the reduction of dislocations.

In treating of the ambè we showed one use of the ladder, namely to reduce the shoulder by levering the arm over a step. For other dislocations portable fittings could be applied to generate power for extension and to convert the direction of motion.

Thus, two pulleys might be affixed to the top steps and two to the lower, and a portable winch fitted to the lower part of the ladder.

One simple form of winch for this purpose was called the *plinthium of Nileus*.

It consisted merely of a small frame carrying an axle, with or without a ratchet. (Figs. 21, 22.)

Fig. 24 shows a ladder fitted up with pulleys at its top and bottom and a *plinthium of Nileus* below.

Fig. 25 shows the reduction of the humerus by a ladder so fitted. The ladder having been fixed in the ground, the arm has been passed over a step of the ladder and the *plinthium of Nileus* has tightened the thongs attached to the arm till the patient is almost suspended.

The operator is pulling the head of the humerus outwards by means of a fillet, while an assistant is pressing down the shoulders of the patient.

Fig. 26 shows the reduction of the ulna at the elbow, and Fig. 27 the reduction of both bones dislocated together. Fig. 28 shows the reduc-

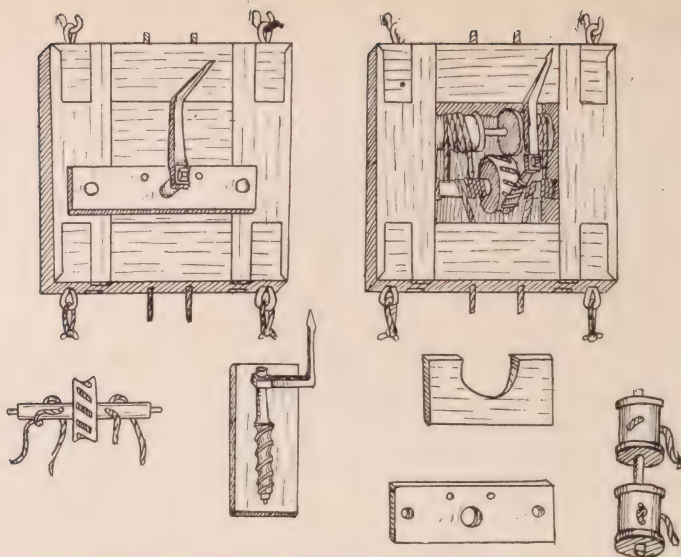


FIG. 31. Glossocomum of Nymphodorus. Two views, one showing it closed and ready for use, the other with the lid removed, to show the principle. A crank drives a shaft with a worm thread on it. The threads of the worm engage in notches in a drum. Ropes pass from the axle on which the cogged wheel drum is carried, to drums carried on a second axle. Below are parts of the machine showing its structure and also the method of fixing the rope ends. After Vidius. Power, ONE TURN OF AXLE only moves the cogged wheel one notch—great power therefore varying with length of crank. Power still further increased by lower axle being smaller than drums of upper.

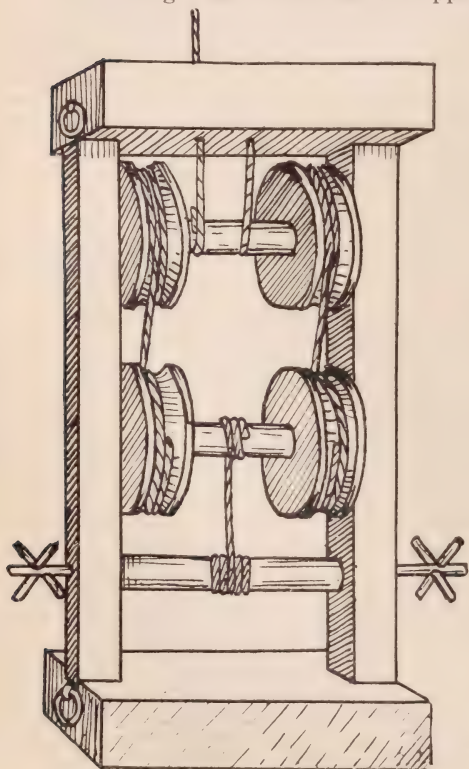


FIG. 32. Trispastum of Apelles or Archimedes with the sides removed to show the works. The power depends on ratio of diameter of axle to length of crank in this figure. But if the lower drums were made smaller than upper as in Fig. 31, power would be further augmented accordingly.

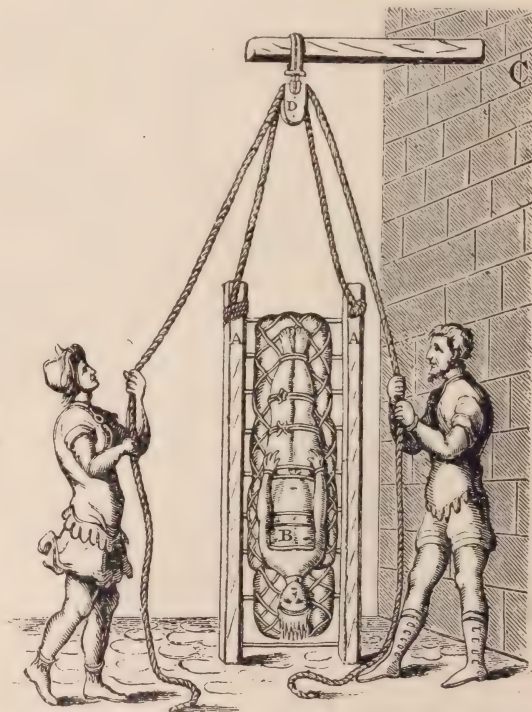


FIG. 33. Sucussion on a ladder for dislocation of the spine. The patient is bound to the ladder by the lower part of the body, the upper hanging free. The ladder is raised by the pulleys and suddenly allowed to drop.

tion of the shoulder. The ladder is placed horizontally in this case, the ends being supported on a pile of wood or stone blocks.

The patient is bound on the ladder, and while extension is made on the arm, the head of the humerus is pulled outwards by a thong passed inside it.

Fig. 29 shows the reduction of the wrist, extension and counterextension are made by thongs affixed below and above the wrist by clove-hitches; while Fig. 30 shows the reduction of the ankle on similar principles.

(In the case of the wrist the ladder is shown tilted up on its side, in order to bring the parts into view.)

A portable winch of more powerful principle was the Glossocomum of Nymphodorus. It is shown in Fig. 31; first, as it appeared when closed and ready for use, and next, with one of the shutters removed to show its internal construction.

It will be seen to consist of a crank, the rotation of which causes a worm on it to turn a cogged wheel.

Round the axle of the cog wheel are ropes passing to another axle, the circumference of which is increased by drums so as to multiply the power, after the manner shown in the figure. One whole turn of axle moves cogged wheel forward one cog. Some of the inner details of the winch are shown below. Another portable winch was the Trispastum of Appelles or of Archimedes. Its construction is shown in Fig. 32, which shows the sides removed to display the working. In actual use, however, it was closed in like the last winch.

Reduction by Means of Inflating a Bladder. In describing the reduction of the dislocation of the spine Hippocrates says that he has tried to reduce the deformity by inflating a bladder affixed to a bronze tube and placed under the spine. The experiment, however, did not succeed for when the man was fairly extended the bladder yielded, and the air could not be forced into it, and besides, the hump of the patient was apt to slip off the bladder.

Hippocrates says he has written this expressly, for it is a valuable piece of knowledge to learn what things have been tried and have proved ineffectual, and wherefore they did not succeed.

Again he says that reduction by the bladder was celebrated in the case of the hip joint.

It is not a powerful method. It should be placed between the thighs uninflated so that it may be carried as far up in the perineum as possible, and the thighs, beginning at the patella, are to be bound round with a swathe, as far up as the middle of the thigh, and then a bronze pipe is to be introduced into one of the loose feet of the bladder and air forced into it. The patient is to lie on his side with the injured limb uppermost.

From this description it would seem that the bladder had consisted of some small skin such as that of a kid.

Succussion, or Suspension on a Ladder. This was done for dislocation of the spine, and usually to astonish the mob, Hippocrates says, although so far as he was aware, the method had never straightened anybody yet. To the mob, however, things of this sort are wonderful, and they never give a thought as to their utility.

A ladder was padded with leather, and on this the patient was laid on his back. The ankles were tied to the ladder by soft strong bands.

The arms were bound to the sides of the patient but not to the ladder.

By means of a rope or ropes affixed to the lower end of the ladder (Fig. 33) it was raised along the gable of a high house or a high tower, or the mast of a ship fixed in the ground. The ropes should run over a pulley or a winch.

For the sake of completeness we may conclude with a short account of the materials used for the treatment of congenital clubfoot by Hippocrates.

Most cases are remediable. After pulling and pushing the parts into position they are to be retained with cerate made with a full proportion of resin, with compresses or pads similar to those described in the treatment of fractures, and soft bandages applied in sufficient quantity but not too tight. The foot should appear to incline a little outwards.

A sole of leather not very hard, or of lead, is to be bound on as you are about to finish the bandaging, not in contact with the skin. The bandaging is to be carried up to the top of the calf, and the bandages are to be finished by stitching. A small shoe of lead is to be bound on externally to the bandaging, having the same shape as the Chian slippers had. This, however, should not be necessary. Thus this method requires neither cutting (tenotomy) nor burning nor any other complex means, for such cases yield sooner to treatment than one would believe. However they are to be fairly mastered only by time and not until the body has grown up in the natural shape, and then recourse is to be had to a shoe.

The most suitable are the buskins, which derive their name from traveling through mud, for this sort of shoe does not yield to the foot but the foot yields to it. A shoe shaped like the Cretan is also suitable.

(As Galen, the great admirer and annotator of Hippocrates, confesses that he is unable to give an exact account of either the Chian slippers, the buskins, or the Cretan shoes, we may leave it to individual imagination to conjecture their appearance.)

MEDICAL AND SURGICAL PROGRESS.

VACCINE THERAPY OF PNEUMONIA.

A REVIEW OF RECENT LITERATURE.

WILLIAM ENGELBACH, M. D.

1. VACCINE THERAPY AND OPSONIC TREATMENT.—Second Edition.—Allen.
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3. VACCINE THERAPY OF PNEUMONIA.—Butler Harris (*Practitioner*, May, 1908).
4. VACCINE THERAPY OF PNEUMONIA.—Coleman (Royal Academy of Medicine, March 2, 1906).
5. VACCINE THERAPY OF PNEUMOCOCCUS INFECTIONS OF THE EYE.—Brisco and Williams (*Practitioner*, May, 1908).
6. VACCINE THERAPY OF PNEUMOCOCCUS OF THE EYE.—Jowers (*Practitioner*, September, 1908).

Allen's method of preparing the vaccine is as follows: Human blood-agar is the best culture medium. Successive strokes either upon blood-agar slopes or plates usually produce a pure culture at the first attempt, especially from an empyema or otitis media, and in eye cases if the eye has been well washed out previously with sterilized saline. In pneumococcal endocarditis cultures must be made from the blood in the same way as for streptococci, with the additional insemination of a tube of agar, by allowing a few drops of the blood to run over its sloped surface. From sputum its recovery is more difficult, and is best done by inserting a small piece of sputum, which has been well washed several times in sterile saline solution, under the skin of a rabbit or mouse. In about forty-eight hours the animal will die with numerous capsulated cocci throughout its blood. Some of the heart-blood is then taken, with aseptic precautions, and allowed to run over the surface of tubes of sloped agar. In twenty-four hours numerous small, transparent colonies, like drops of dew, appear. So rapidly does this organism lose its virulence, and therefore its value for the preparation of a vaccine, that even in four or five days after isolation from an animal's body its pathogenicity is already diminished. It is, therefore, especially necessary in the case of this organism that a first subculture should be employed for a vaccine. As in the case of the gonococcus, the cultures should be made on the human blood-agar and incubated for between eighteen and twenty-four hours at 37° C. MacDonald studied the index in eight cases of pneumonia, and found that while the temperature is rising and during the fastigium the opsonic index is below normal, whereas at

the onset of the crisis there is a sudden rise, even as high as 1.6. Subsequent observations have shown that in very severe cases failure of the index to rise in this manner at the crisis is a matter of grave importance, and that such cases usually die.

Recent attempts have been made in America to treat pneumonia as a routine by injection of a vaccine, and considerable success has been claimed. The temperature is said to fall several degrees within twenty-four hours; the crisis is precipitated within three or four days, and the convalescence is rapid and complete. The whole duration of the disease when so treated is claimed to lie within a fortnight.

Butler Harris refers to four cases of pneumonia which failed to immunize themselves, and responded at once to the introduction of a vaccine made from the patient's own pneumococcus—details of the cases are not given. Favorable experiences of the routine injection by 25,000,000 organisms of the cases of acute pneumonia have been communicated. Unresolved pneumonia would appear to be particularly suitable for vaccine therapy. Coleman recorded such a case treated by inoculation of pneumococcal vaccine with very satisfactory results. On the thirty-eighth day of attack the pneumococcic index was 0.6; 46,500,000 cocci were therefore given. There was no disturbance, local or general. Next day the index was 0.69, and the physical signs were those of pneumonia of five or six days' standing. Six days after injection the index was 1.17 and the patient was much better. Ten days after injection the index was 0.89, and 46,500,000 were again given. Three days after second injection the index was 1.13. Eleven days after the second injection the patient was in excellent health, and for six weeks subsequently the index was observed to be slightly over normal. Briscoe and Williams subjected four such cases, which were not improving under ordinary treatment, to vaccine therapy. Cultures were made from the patient's own organisms and the guidance of the opsonic index was utilized. Case 1 was in a child aged one and a half years. A month after admission a consolidation at the right base was still unresolved. The index being 0.9, an injection of 20,000,000 cocci was given. A slight rise of temperature resulted, and the child was not so well for eighteen hours. He then began to improve in weight and general condition. Two days after the first injection the index was 1.2. Four days after the first injection there were only a few crepitations and slight bronchial breathing. Five days after the first injection the index was 1.3. Six days after the first injection there were crepitations, but no bronchial breathing. Nine days after the first injection the index was 1.2. Eleven days after the first injection 10,000,000 cocci were given without any ill effect, and next day index was 1.4. Two days after the second injection crepitations were audible only at lower and posterior aspect of the lobe. Five days after the second injection 10,000,000 cocci were given, and next day the chest was clear.

Case two was in a child aged one year and nine months, and was readmitted two months after having been admitted for right basal and later apical consolidation. Turbid fluid was found, and one injection of 20,000,000 given. The child steadily got worse, and died in a few days. Post-mortem, loculated septic pericarditis with universal mediastinitis, collapse and consolidation of the right lung was found. The presence of the old-standing septic pericarditis may be held to have contra-indicated vaccine therapy, and the case is hardly a fair one upon which to base any conclusion.

Case 3 was in a child of two, in whom the temperature remained intermittent after drainage of an empyema. Two injections, the first of 10,000,000, the second of 40,000,000, eight days after the first were given. Measles, unfortunately, complicated the case, but the authors state that the child's general condition was improved, and the temperature slightly reduced as a result of the inoculations.

Case 4 was one of right basal consolidation, with a history of one week, in a man of forty-four. Although the temperature soon fell to normal, the local signs failed to clear up. Sixty million organisms were therefore injected on about the twenty-second day, and again thirteen days later. After the first injection the moist sounds cleared up entirely in the next three days, and the sputum diminished two days after the second injection. There was no bronchial breathing, but the breath sounds were a little harsh. His general and mental condition, previously bad, improved rapidly. The authors' conclusions are that "in these more or less acute cases the improvement in general condition is quite a marked feature, and it appears to be an important factor in the question of continuing the treatment. The injection produces a stimulating effect, and the patients always seem to be more cheerful afterwards. An increase of weight occurs rapidly in the case of children." They also produced decided improvement in two cases of a chronic nature in adults, the history in each dating back ten months. Doses of 50,000,000 and 100,000,000 were employed.

In empyema good results may be anticipated when vaccine therapy is directed against the organisms found to be present. In only a certain percentage are pneumococci alone present; in some cases they are absent altogether; in most there is a mixed infection with streptococci, staphylococci, *Bacillus pyocyaneus*, *Bacillus coli communis*, etc., and in these a mixed vaccine will have to be employed in conjunction with such measures as surgical experience indicates. Improvement may be slow, and prolonged treatment necessary.

A number of cases have now been reported in which the pneumococcus has been found to be responsible for metritis and pyosalpinx, and in a few instances for a resultant peritonitis and systemic infection. The possibility of this might well be borne in mind by obstetricians and abdominal surgeons, and recourse made to vaccine therapy. Jowers records such a case in a girl of fourteen, in whom a diagnosis of general peritonitis, secondary, probably, to perforated appendix, was made. At operation the appendix was found to be normal, but the right Fallopian tube distended, the ovary swollen and adherent to the pelvic wall. The abdomen contained colorless pus. The pneumococcus was isolated in pure culture and a vaccine made. Upon the eighth day after operation 50,000,000 cocci were given; upon the tenth day 60,000,000, and upon the thirteenth day after operation 200,000,000 were given without the control of the opsonic index. The temperature only came to normal after five weeks, the pulse all this while being high. The child then made a good recovery. The impression conveyed from the published account is that, if the vaccine therapy had been controlled by index determination and persisted in, a more speedy result would have been obtained.

Three cases of acute pneumococcal conjunctivitis, progressing to hypopyon ulcer, have also been subjected to Allen's vaccine therapy. Two of these cases were under the care of Dr. Willoughby Lyle, who furnished the following notes upon them:

"A male, aged forty-nine, was suffering from a rapidly infiltrating corneal ulcer, with hypopyon two-thirds up the aqueous chamber. Local treatment was preserved with for twelve days without any improvement whatever taking place; in fact, the intra-ocular tension was raised and the local pain so great (and there was no perception of light) that it was almost decided to excise the eyeball. Vaccine therapy, however, was commenced, and local treatment persevered with. In four days the hypopyon began to disappear, and the cornea to clear at the margins. From that time until the patient left the hospital—four weeks later—the eye gradually improved. Altogether two injections of 250,000,000, and one of 500,000,000 pneumococci were given. On examination two days after leaving the hospital, the local condition was as follows: There was a large, irregular leukomatous patch, somewhat vascular, over the lower two-thirds of the cornea, a narrow ring of clearer cornea, below the leukoma. The margin of the pupil could just be seen over the nebulous cornea above. The intra-ocular tension was normal, and the patient could distinguish between light and darkness.

The second case was in a child, aged three years, seven months, who was admitted into the hospital with a central corneal ulcer with infiltrating margins and a small hypopyon. In spite of local treatment, the hypopyon increased, the ulcer spread, and the cornea ruptured. Vaccine treatment was commenced with a dose of 175,000,000 pneumococci, and from that time the eye began to clear. When the child left the hospital there was a large "leukoma adherens"; the cornea was somewhat vascular; there was a well formed aqueous chamber; the iris was a good color, and reacted readily to light.

"The favorable result obtained in these cases was very largely due to the vaccine treatment, and but for it the first mentioned patient would undoubtedly have lost his eye."

The third case was a very severe one. As soon as the pneumococcus was isolated, a dose of 250,000,000 of the pneumococcal vaccine, which had been prepared for Case 1 of Dr. Lyle's, was given. Improvement began within twenty-four hours, and progressed with extreme rapidity. The hypopyon was rapidly absorbed, and the patient discharged within a week.

Of the chronic forms corneal ulcer due to pneumococcus, the *ulcus serpens corneæ* is best known. Two such cases have been treated by Allen, with complete success by means of autogenous vaccine. One of these deserves further mention. The patient was a man, eighty years of age, was admitted with a very bad corneal ulcer. A large hypopyon was present; the cornea was very opaque, the iris bound down by adhesions, and the tension was 1.5. Cauterization, paracentesis, and, later, sclerotomy for the relief of tension and evacuation of hypopyon, brought only temporary improvement, and excision seemed to be the only remedy. The condition was still acute when the pneumococcus was isolated and a vaccine prepared. Despite the high index to this organism—viz., 2.5—an injection of 250,000,000 organisms was given. Within three days the eye began to improve in appearance; at the end of a week the index was 4.2; and after a fortnight 3.0. A second injection was then given, with the result that eighteen days later the index stood at 6.3, and the inflammation had quite subsided. A large partial staphyloma of the cornea which developed later was treated radically by excision without the use of sutures. No reaction followed the operation, and the final result was an eye in which some slight vision was preserved, and a firm, flat scar in the cornea left in the site of the staphyloma. Several months later the eye was free from irritability.

RECENT TENDENCIES IN THE OPERATIVE TREATMENT OF GLAUCOMA.

A REVIEW OF RECENT LITERATURE.

By JOHN GREEN, JR., M. D.

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3. EXPERIENCES WITH CYCLODIALYSIS.—Boldt (*Beitr. z. Augenh.*, Heft 68, p. 463).
4. CYCLODIALYSIS.—Meller (*Oph. Soc. of Vienna*, 1907).
5. CYCLODIALYSIS IN THE OPERATIVE TREATMENT OF GLAUCOMA.—Weekers (*Klin. Monatsbl. f. Augenheil*, Aug.-Sept., 1907).
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7. EXPERIMENTAL STUDIES UPON CYCLODIALYSIS. — Wichodzeff (*Klin. Monatsbl. f. Augenh.*, December, 1907).
8. CONCERNING CYCLODIALYSIS. EXPERIMENTAL INVESTIGATIONS ON ANIMALS.—Judin (*Klin. Monatsbl. f. Augenh.*, December, 1907).
9. IRIDENCELEISIS FOR GLAUCOMA.—Holth (*Ann. d'Oculist*, May, 1907).
10. PRODUCTION OF FILTRATION SCAR FOR GLAUCOMA.—Lagrange (*Arch. d'ophthalm.*, August, 1906).
11. FILTERING CICATRIX FOR GLAUCOMA.—Herbert (*Ophthalmoscope*, June, 1907).
12. SO-CALLED FILTERING CICATRICES IN THE TREATMENT OF GLAUCOMA.—Henderson (*Ophthalmoscope*, December, 1907).

Recent developments in the operative treatment of glaucoma indicate a growing belief in the inefficacy of the classical operations of iridectomy and sclerotomy (at least for certain types of the disease) and a tendency to the creation of novel operative methods based on new principles or designed to enhance the effect of older methods.

In considering any novel operative attack we may recall that the ingenuity of several generations of ophthalmic operators has failed to develop a procedure as efficient or as widely applicable as either iridectomy or sclerotomy. We have only to recall the failure of sympathectomy to live up to its earlier promise to understand that more recent methods, now so bright with promise, may eventually rank no higher than sympathectomy in the estimation of operators.

Foremost among the newer operative procedures is that devised by Heine to which he has given the name "cyclodialysis." Reasoning from Axenfeld's dictum that the success of iridectomy in many cases depends upon the establishment of a communication between the anterior chamber and the suprachoroidal space, Heine has sought to effect this communication in the following manner: A flap of conjunctiva 8 mm. from

the limbus is raised and caught by a suture. With a lance or Graefe a tiny opening is made in the sclera parallel to the corneal margin and 5-6 mm. away from it. Great care is taken not to injure the uveal tissue. A spatula or iris repositor is introduced between the sclera and the choroid and gently pushed forward through the ligamentum pectinatum until the tip enters the anterior chamber. The opening in the ligament is enlarged to 2-3 mm. by lateral sweeping motions of the spatula which is then cautiously withdrawn and the suture tied.

In favorable cases tension is reduced, the anterior chamber deepens, the field widens and central vision improves.

In a later paper based on 56 operations Heine states that in two cases of bilateral glaucoma in which iridectomy was performed on one eye and cyclodialysis on the other, the results were better in the eyes with the cyclodialysis operation. It is considered less dangerous than iridectomy, the pupil remains round and hence responds better to miotics. It is applicable to certain varieties of the disease, e. g., hemorrhagic glaucoma, buphthalmus, etc., in which iridectomy is contraindicated.

The operation has been received with great interest by ophthalmologists throughout the world. Boldt, on the basis of an experience with 37 cases, states that the operation offers no difficulties. The possible complications are irido-dialysis, penetration of the corneal lamellæ by the spatula, and the entanglement of the instrument in the iris owing to the rapid escape of the aqueous. In 31 cases there was unmistakable improvement for a longer or shorter time. Varieties of the disease most suitable for this operation are chronic inflammatory, simple, hemorrhagic and juvenile glaucoma, glaucoma associated with high myopia and buphthalmus. Meller, in a very complete discussion of the operation, reports in 40 per cent permanently favorable results, in 30 per cent temporarily good results and in 30 per cent no result. Weekers on the basis of 5 cyclodialysis operations in advanced chronic glaucoma believes that the operation has not fulfilled expectations for advanced cases. The question of its possible efficacy in early cases is as yet unsolved. Schnabel is opposed to the operation on three grounds: first, that it is technically impossible to perform; second, that it depends on theoretical considerations which he considers without foundation; third, that it might possibly replace the condition of glaucoma with that of another disease, namely, essential phthisis. Experimental studies on cyclodialysis by Wichodzeff and Judin gave rather inconclusive results, though tending to show that the operation may produce unexpected anatomic effects.

It has long been known that the formation of a cystoid scar through unintentional incarceration of the angle of the coloboma after iridectomy—a technically imperfect result—often resulted in a more effectual termination of the glaucomatous process than when the operation had been technically faultless. Some operators have even advocated the deliberate incarceration of the iris in the wound with a view to producing just such a condition. The occasional occurrence of infection in such scars and the possibility of such eyes giving rise to sympathetic disease through traction on the iris and ciliary body have deterred most operators from adopting this method. Recently Holth has devised an operation,—“iridencleisis antiglaucomatosa”—having for its immediate object the subconjunctival prolapse of the iris and for its ultimate object the formation of a cystoid scar. Through a scleral incision the periphery of the iris is drawn up and allowed to heal in the wound. Usually a fistula is produced which is lined with pigment epithelium and

which extends to the subconjunctival connective tissue. Simple adhesion of the iris without formation of a fistula may lead to normal tension by communication of the uveal and subconjunctival blood and lymph vessels.

The manifest disadvantage of this type of filtering scar has led several operators, notably Lagrange and Herbert, to devise operations which should permit of filtration but without involvement of the iris. Lagrange makes an oblique scleral incision terminating in a large conjunctival flap. The anterior lip of the scleral wound is then seized by forceps and a small piece cut out of it by means of a fine pair of curved scissors. Finally, an iridectomy is performed. In Herbert's operation the incision is associated with the isolation of a single wedge of corneo-scleral tissue. His results in the production of a filtering scar have been uniform and trustworthy. One advantage of this method is that in case of failure the procedure does not forbid other operations.

On the basis of anatomical studies, Henderson endeavors to show that the success of operation in glaucoma does not lie in a filtering scar, but in the accompanying iridectomy. After an incision into the anterior chamber the endothelial cells grow along the internal margin of the wound and so come to seal it off. Once the growth of endothelium is complete the wound is no more a filtering scar, but is shut off from the anterior chamber by a layer of new-formed endothelial cells which proceed to lay down a new homogenous membrane between the cut surfaces of Desemet's membrane. It is this endothelium that precludes all possibility of a permanent filtering cicatrix following any operative incision however devised.

THE STATUS OF THE HORMON QUESTION.

A REVIEW OF RECENT LITERATURE.

By CARL FISCH, M. D.

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9. DIABETES AND THE REACTION OF PANCREAS EXTRACT ON THE MUSCLES.—Cohnheim (*Zeitschr. f. physiologische Chemie*, Vol. 42).

The reason for reviewing the present status of the hormon problem, introduced into science some years ago by Starling, is found in the last paper by Zuelzer quoted above. A great change in our present conceptions concerning the functions of the so-called glands with internal secretion, will undoubtedly occur as a consequence of further study of the subject of hormones. While formerly the varying relation between certain tissues on the varying influence of one tissue upon another was explained on the theory of nervous changes, more recent studies of definite substances, the products of different organs and tissues, have led to the theory that these products, carried through the blood and lymph channels to certain structures, exercise a specific activity upon these structures. That these products are formed in many cases in the so-called glands with internal secretion was distinctly known for a long time as regards the thyroid, parathyroid and suprarenal glands, and in a lesser degree, the pituitary body. The interrelation of all these structures in their influence on the functions of the living organism was first pointed out by Sajou, who built up a theory by which he endeavored to explain most of the pathologic problems. Baumann was the first to establish for the thyroid the production of a definite compound, the iodothylin. The existence of a definite substance in the parathyroid is also certain, and for the suprarenal the hormon is chemically definite and can be artificially produced. The effects of these substances, either by overproduction or by

the absence of production, can be experimentally demonstrated. All of these are disseminated by the fluids of the body into which they are brought from the producing structures. All of them differ from any other proteid compounds by their thermostability. Their action is not, like the other substances carried by the blood, of a nutritive character, but only that of a stimulant or irritating agent. They are carried from the site of production to far distant organs.

About four years ago, Starling, together with Bayliss, studied the nature of the action of the acids brought into the duodenum stimulating immensely the pancreatic secretion. They observed this effect after separating altogether the pancreas and duodenum, and injecting acid into a ligated piece of intestine which had been deprived of all nerve connection. The pancreatic secretion was increased to the same degree and therefore must be due to a definite substance. The scrapings of the duodenal mucosa were triturated, boiled, and extracted with alcohol. After evaporation a substance was obtained that caused, when injected intravenously, excessive pancreatic secretion. The substance was called secretin and the secretion of this secretin is caused by the presence of acids in the duodenum. While certain influences of the nervous system (for instance, Pawlow's "appetite" secretion) are proved, it is now established that several secretions of the intestine are produced by hormones in different portions of the intestinal tract and of the stomach. Bayliss ascertained that the production of bile is also stimulated by secretin. That the glycolytic power of the pancreas is not due to the secretion into the duodenum is a fact long well-known. Diabetes does not develop if all the secretion is removed through a fistula. Cohnheim, observing the constant presence of glycogen in muscles and the liver, proceeded to press out fluids from the pancreas and muscle tissue, but none of these fluids had any effect on glucose. If, however, to the muscle extract a minute quantity of pancreatic extract was added, the glucose was quickly split up into alcohol and carbonic acid. Hirsch afterward established the same action for the pressed out fluid from the liver, that in itself has a slight degree of glycolytic power but with the addition of a small amount of pancreatic extract becomes powerfully glycolytic.

Zuelzer demonstrated that one hormone (adrenalin) had the specific function of mobilizing sugar, and that this diffusion of sugar is regulated by an antagonistic hormone present in the extract of pancreatic tissue. He has lately added to the hormone group an exceedingly important investigation. The idea that the function of intestinal peristalsis was not of nervous origin only, but was due to a definite chemical substance acting on substances in the muscular structures, was followed up experimentally. Pawlow has demonstrated that mastication has a great influence on the secretory activity of the stomach, and that the duodenal Brunner's glands depend for their secretion upon the antecedent production of hydrochloric acid in the stomach. This made it very suggestive to look for a hormone regulating peristalsis as formed in the stomach. An empty stomach is free from such a substance. The animals experimented upon were used at the time of the height of digestion, a point that in previous experiments in work on the pancreas secretion promised results. From the mucosa an alcoholic extract was made after the method described before. If this substance is injected intravenously, peristalsis starts in a few seconds in the duodenum and extends to the rectum. In experiments in which the intestines in the anesthetized rabbit were kept floating in salt solution, the fecal material is seen to move from above to the anus. The experiments were made with material obtained from rabbits, hogs, cows and

horses. All of them showed the presence of this hormon. Interesting is the finding that of the four so-called stomachs of cattle, only the portion that performs the digestion, the omasum, contains peristalsis hormon, not the three others.

That hormones play a great part in other phenomena and conditions is very probable. The internal secretions of the large interstitial cells of the testicle, that are of the same genetic character as the cells of the tubules, when removed by excision of the testicles, prevent the development of secondary sexual changes. Removal of the seminal vesicles alone has no influence on their appearance. The same obtains for the ovaries that, also, when removed before maturity, lead to the same defect. That the internal secretion of the ovaries has a great deal to do with the changes during pregnancy in the sexual organs, etc., especially that the lutean bodies are made responsible for the preparation of the mucosa for the imbedding of the ovum, are opinions that have been held for some time. Whether the development of the breasts and the secretion of milk is of the same origin and due to the ovarian secretion carried to them by the blood, is doubtful, although not disproved by an interesting series of experiments made by Starling on female rabbits. He used only females that were as yet virginal. In these animals the breasts were distinctly rudimentary. On examination they consisted of a very few strands of epithelial cells, with no definite glandular structure or arrangement. Starling injected into these animals an extract made from embryos and succeeded in obtaining in these animals the same development of the breasts as is found in the corresponding stages of pregnancy. There must be present in the body of the embryo a substance that specifically stimulates the "anlagen" of the breasts of the rabbit and prepares them for their function.

The importance of these investigations, and some others that so far are not worked out with the same degree of completeness and conclusiveness, lies in several directions. The modern tendency to explain metabolic and other processes in the main by fermentative action, extra- and intra-cellular, is to a degree checked by the work on the hormones, which point to direct chemical processes. The latter, on the other hand, proves the intimate relation and co-working of tissues located at great distances from each other, brought by means of the circulation into physiologic activity, and form, in their connection, the unity of a physiologic process involving different tissues and organs,—another evidence for the unity of the system, for the importance of the whole in the functional qualities of the constituents, the cells, that are only the product of the needs and integrity of the whole. That an organ of specific importance for life should be unable to perform its function without the influence of the products of another specific organ, is evidence of the primary wholeness of the organism, of which the cells are only the factors directing the energy in the various ways allowing of the existence of life. The former belief, that the functions of many organs were controlled only by the nervous system, and that pathologic functions were due to the changes in the innervating fibers, must, to a measure, be limited to a smaller scope, a view that had been entertained before the demonstration of hormones was possible.

BRACHIAL PARALYSIS.

A REVIEW OF RECENT LITERATURE.

By MALVERN B. CLOPTON, M. D.

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4. OBSTETRICAL PARALYSIS.—Osterhaus (*N. Y. Med. Journ.*, November 7, 1908).
5. INJURIES OF THE NERVES.—Sherren (*Injuries of the Nerves and Their Treatment*. London, 1908).

Clark, Taylor and Prout, after an extensive review of the subject of brachial birth palsies, find that there has been no demonstrated proof of the theory that traction causes the nerve lesion occurring most frequently in breech and vertex presentations. In experiments on twenty infant cadavers, they were able to reproduce lesions identical with those found in the seven cases they operated. Of the experimental lesions 80 per cent were of the 5th and 6th nerves above the point where they fuse to form the outer cord,—the 5th always giving way first. The lesion consists of tearing of the nerve sheath, with a hemorrhage which infiltrates the structures of the nerve as it is ruptured at varying levels. Later at operation a much thickened cervical fascia was found adherent to the nerve roots. In one case at operation there was a distinct severance of the 5th root before its junction with the 6th, and the nerve ends were rounded and imbedded in the cicatricial hemorrhagic mass. Organization of a blood clot and healing of the sheath takes place before the nerve fibers regenerate and may prevent regeneration in a large number of cases. The suprascapular nerve comes off at the junction of the 5th and 6th roots, where there is usually the most damage, and in operating it should be carefully sutured to the proximal nerve stump. In many cases the nerve is in anatomical continuity, but on palpating a scar can be felt, usually at the junction of the 5th and 6th. The authors believe that palliative treatment should be followed for a year, because recovery may progress for that time, and by waiting the field of operation is larger and the lesion can be more definitely localized. There is also less danger from operative shock and hemorrhage. Kennedy, in 1900, was the first to operate to excise the scar in cases of brachial palsy, but since then many cases have been reported. The authors have seven of their own operated cases, but of these only two were of sufficient interval after operation to report on the end results and both showed marked improvements. The extent of the paralysis determines the part of the plexus to investigate, but usually it is the 5th and 6th roots. The in-

cision is along the posterior border of the sterno-mastoid in its lower two-thirds and is carried in until the omo-hyoid is exposed and if necessary divided. The suprascapular vessels may need to be divided, particularly if the lower roots are attached, and at times the clavicle is cut to get a proper exposure. The deep cervical fascia is divided in the direction of the plexus, and the nerve trunks dissected away from it, and the extent of their injury determined by palpation and inspection. With a sharp knife (not scissors) the indurated areas are excised and the nerve ends approximated by lateral fine silk sutures, and the anastomosis is wrapped with Cargile membrane. The head is dressed in a position to approximate the shoulder, and thus is prevented any traction on the sutures until healing is perfect, which is in three weeks. Of the seven cases two died, one from diarrhœa, the other, after an extensive operation on the whole plexus, from shock.

Warrington and Jones have observed 30 cases of paralysis of the brachial plexus with 11 complete recoveries. Birth palsies are less favorable than injuries in adults. A small group is due to spontaneous neuritis; the others were traumatic. Some were birth palsies, the others were due to falls on the shoulder or hitting the patient on the neck. The one case they had due to dislocation of the shoulder recovered after operation. They accept the traction theory, and believe that when the child is peevish and in pain, a tearing has taken place and spontaneous recovery rarely follows, but that pressure of a cicatrix outside a nerve is not accompanied by pain and recovery is most likely. The roots may be torn out and change then takes place in the cells of the anterior cornua. There is no means of diagnosing the extent of the lesion immediately after incidence as symptoms of compression or complete rupture are identical. The alteration of sensation is only found when the injury is of the lower roots; the upper roots may suffer severely without loss of sensation, and the 5th root is said to contain no sensory fibers. In none of their cases with full paralysis of the upper roots or lower roots did recovery ensue. The nearer the spinal cord the injury is found, the worse the prognosis. A pupillary paralysis results from an intra-vertebral lesion. A rhomboid, serratus magnus and levator anguliscapuli paralysis indicates a lesion internal to the extra-vertebral portion (rhomboid and posterior thoracic nerves). A supra- and infra-spinati paralysis indicates a lesion before the plexus is formed.

The treatment in the beginning is supporting. Complete recovery of a muscle rarely comes when paralysis is present for 3 weeks, unless the elongated muscles are relaxed, so the arm must be held in a sling. The interval before operation is fixed at 8 months, for by this time the signs of recovery without operation are evident. They operate as in the method described above. The injury to the nerves is determined both by palpation and a direct view and further they use an electric current to determine which bundle of the nerves remains intact and which is injured. In this way, particularly with the 5th and 6th, it is found that the 5th is always most injured and that the 6th is frequently only bound down by a scar. In every method of junction, success has been obtained. Clearly, when possible, end to end junction is the ideal method, but in brachial injuries this procedure is only occasionally available, and the cicatrix makes nerve stretching impossible, and a pull on the nerve makes the suture less effective. With Spitzzy they favor imbedding the pathological into healthy nerve, more particularly the 5th when it has been ruptured close to the emergence, into the healthy 6th (anastomosis). They use Sherren's classification of nerve transplantation, nerve anasto-

mosis and nerve crossing, excluding the term nerve grafting. In their operated cases they had several successes, but the proportion of failures to successes is not mentioned. The results of Robert Campbell with three recoveries out of six cases operated, and Thornburn with one case with partial recovery when operated 7 months after injury, are mentioned. Sherren had one case in which he sutured the upper and middle trunks 9 weeks after the injury, followed by improvement in sensation and motion in 182 weeks, but it was 333 weeks before all the muscles reacted, which shows that a delay in return of function may be great but recovery eventually ensues. Using Kennedy's and other's cases, they found that in children aged 2 months, 14 years, 2 months, 3 months, 10 years and 8 years, that voluntary power returned in $2\frac{3}{4}$ months, $1\frac{1}{4}$ years, $2\frac{3}{4}$ months, 4 months, 3 months and 5 months respectively after operation.

In a later paper Taylor reports on the operative results in nine birth palsies. Because of the impaired development of the extremity, contractures of muscles and ligaments and atypical shape of the joint ends of the bones, all of which cause the characteristic deformity of the lesion and which render post-operative return of the extremity toward normal extremely slow, early operation is indicated, that is in from 6 to 12 months. Some additional palsy is usually caused by the operation but this is soon recovered from, and following operation there come improved nutrition and growth of the extremity with increased range and power of motion. Of the seven cases recovered there was no shock or rise of temperature. There is a change in nutrition about the 4th month, and the return of power in the muscles paralyzed by the operation is usually rapid and may be complete at the end of from 6 to 8 months, although one case took 15 months. The return of power in the previously paralyzed muscles appears in from 6 to 10 months. Stress is laid on the careful suture of the suprascapular. In one case there was an evidence of nerve bridging through a space of 2 c.m. after excision of the entire plexus, with some return of motion in six months.

Osterhaus applies the principle of nerve bridging in a new way. Instead of using cat-gut or other material as in aid to direct the new fibers, he allows the scar tissue to take this place. This is done by lifting the nerve from its sheath on two fingers and with a sharp tenotome the nerve fibers constricted by the scar are completely dissociated by innumerable cleavages in the direction of the long axis of the nerve. Cargile membrane is then wrapped about it. The return of function that followed was very rapid.

Sherren in several cases in which he performed nerve anastomosis in this region was able to stimulate the 6th with the interrupted current, producing a contraction of the clavicular portion of the pectoralis major and in one a feeble response in the triceps, and concluded that the 6th cervicle supplies no group of muscles in the arm and forearm.

A patient with paralysis may be unable to supinate the forearm and abduct the arm and in most cases to flex the forearm, but there may be some flexion of the forearm when fully pronated due to forearm muscle arising from the external condyle although the biceps and brachialis anticus remain palsied. After this or after other nerve injuries the abnormal position of the limb may persist although the muscles have regained their normal power of movement, and these may remain permanently wasted, because of the inefficiency of the after treatment.

The lower arm type (Klumpke) of paralysis, if due to injury, is usually due to traction on the roots from below as in falling from a height

and grasping at a projection, or overflexion or overextension of the neck; in the last cases it may be bilateral. All the muscles of the hand are affected and the hand assumes the true claw-shape. Sensibility is usually altered over the inner side of the arm and forearm, sometimes the ulnar border of the hand. Orbital symptoms may follow from injury to branches given to the cervical sympathetic.

Inner cord injuries are the most common after Erb-Duchenne paralysis and are due usually to a subcoracoid dislocation of the humerus. They nearly always recover without operation. The muscles paralyzed are those supplied by the ulnar and muscles of the hand supplied by the median.

Posterior cord lesions also follow dislocation of the humerus and are followed by paralysis of the muscles supplied by the musculo-spiral and circumflex nerves with the alternation of the sensibility over the areas of skin supplied by these nerves.

Sherren states that no instance of perfect recovery after secondary suture of the whole plexus has been recorded. In injuries of the lower arm type the lesion is in the first dorsal and the clavicle will have to be divided, and an anastomosis to the eighth cervical be made.

In birth palsies Sherren has found in his practice a spontaneous recovery in about 70 per cent of the cases, over twice as many as reported by others. In many instances paralysis had completely disappeared by the time the child was brought to have its electric reactions tested at the age of three months. Complete spontaneous recovery rarely takes place if no improvement is noticed by this date.

DIAGNOSTIC AND THERAPEUTIC NOTES.

BEE'S STINGS AND RHEUMATISM.—E. W. Ainley Walker (*The Brit. Med. Jour.*, 1908, No. 2493) has investigated the statement that the sting of a bee will cure chronic rheumatism. Walker collected information from country doctors, bee-farmers and from Dr. Ferc in Austria, who treated 700 cases of chronic rheumatism with bee's stings during the last 30 years. That the subject is worthy of earnest consideration is evidenced from the reports collected by Walker. A peculiar fact brought out in these investigations, is the knowledge that sufferers from rheumatism are very little susceptible to the bee's sting. The active principle in the bee's poison is probably formic acid, which is found in the poison with an alkaloid. Further study of the subject is advisable, and hypodermic injections of the poison could be tried.

DIAGNOSTIC USE OF THE DIFFERENTIAL CUTANEOUS REACTION.—Detre (*Wien. klin. Wochenschr.*, 1908, No. 41).—Detre's method is a development of von Pirquet's test. At three different spots the patient is inoculated with old tuberculin, the filtrate of a culture of human tubercle bacilli and a filtrate of a culture of bovine tubercle bacilli. If none of the inoculations produce a reaction, the patient is free from tuberculosis. If the culture of bovine bacilli produces a stronger reaction than that of human bacilli, the infection is of bovine origin; if the reverse, the infection is with human bacilli. This method, if trustworthy, not only throws light upon the etiology of the disease but enables a rational immunization therapy to be carried out, human tuberculin being used for infections with human bacilli and bovine for those with bovine bacilli.

EARLY DIAGNOSIS OF TUBERCULOSIS.—Calmette (*Deutsch. med. Wochenschr.*, 1908, No. 40).—At the recent international tuberculosis congress in Philadelphia, Calmette reviewed the various tuberculin tests and concluded that his method of ophthalmodiagnosis is to be preferred to all others. His conclusions are based on an enormous material and, contrary to the opinion of many other clinicians, he believes the test to be absolutely harmless. Properly interpreted it is trustworthy. Patients who react to the instillation are always tuberculous. On the other hand, a negative reaction does not exclude tuberculosis since the test fails in tuberculosis of long standing, in cachexia and in acute tuberculous affections.

THE VALUE OF BLOOD PRESSURE MEASUREMENTS IN CHRONIC NEPHRITIS.—Engel (*Muench. med. Wochenschr.*, 1908, No. 41, p. 2154).—Engel attempts to utilize the variations in blood pressure in nephritis prognostically as follows. Only the mildest cases of chronic nephritis remain parenchymatous and therefore free from elevation of blood pressure. In more severe cases of chronic nephritis, the absence of high blood pressure indicates a lack of cardiac compensatory hypertrophy and involves a bad prognosis. A steady, not erratic, rise in blood pressure is by no means a grave sign. Outspoken, genuine contracted kidney is

characterized by a great elevation of blood pressure; contracted kidney secondary to arterio-sclerosis produces only a moderate degree of elevation. A sudden fall of the high blood pressure of chronic interstitial nephritis should always be considered a sign of serious trouble impending.

THE TREATMENT OF CHRONIC CONSTIPATION.—Liebman (*Wien. klin. Wochenschr.*, 1908, No. 39) remarks that chronic constipation is often cured in a short time by having the patient wear an abdominal bandage. In a great many of these cases the constipation is due to enteroptosis, especially gastropotosis, causing a descent of the colon and occlusion of same. Röntgenologic examination shows the good action of the abdominal bandage. Especially, when the pressure is applied above the symphysis, the colon could be seen raised. Regular and normal defecation is generally accomplished in a few days.

THE MOVABLE COECUM AS A CAUSE OF MANY CASES OF SO-CALLED CHRONIC APPENDICITIS.—The symptoms of so-called chronic appendicitis are not typical and their cause may be quite different. A macroscopic, healthy appendix is often removed by operation in these cases, in which the pathologist finds some simple changes that can not account for the attacks of pain or the pain at McBurney's point. Very often during the operation it is noticed that appendix and coecum can be brought outside of the wound very easily. Wilms (*Deutsch. med. Wochenschr.*, 1908, No. 4) removed the appendix in these cases *more maiorum*, but at the same time fixed the cecum. The results of these operations (40 cases) were very good, which can not be said of simple appendectomy. The pain in these cases is caused by stretching of the mesenterium of the mesenteriolum.

ATAXIA LOCOMOTOR AND PARALYSIS IN THE LIGHT OF THE NEWER SYPHILIS RESEARCH.—Fritz Lesser (*Berl. klin. Wochenschr.*, 1908, No. 29) states that Wassermann's syphilis reaction is positive in paralysis in 100 per cent. of the cases and in ataxia locomotor in 50 per cent. of the cases examined. Both diseases must be looked upon as the result of syphilis, but in none of them is the real process a syphilitic one. It is the result of nerve degeneration, caused by meningitis syphilitica, which may still be present or not. The meningitis luetica may be compared with the media infiltration in aneurysm of the aorta. This explains why antiluetic treatment does not benefit the disease. Healthy persons, who have suffered from syphilis before, show the reaction in 50 per cent. of the cases; and these are apt to be afflicted with ataxia locomotica and paralysis. It is possible, according to Lesser's experience, to make the reaction disappear by specific treatment. Healthy persons showing the reaction should therefore undergo antisiphilitic treatment for a considerable time. This is the best prophylaxis for paralysis and ataxia locomotica.

POTASSIUM IODIDE IN SUPPURATION OF THE NASAL CAVITIES.—H. Hempel (*Berl. klin. Wochenschr.*, 1908, No. 29).—Potassium iodide, 5 per cent. solution, a teaspoonful three times daily, has a very favorable influence on acute and chronic suppuration of the nose cavities. The pain soon disappears and the secretion becomes less thick. It should be tried before advising an operation.

OBITER DICTA FROM FOREIGN JOURNALS.

TUBERCULOSIS IN PRISONS.

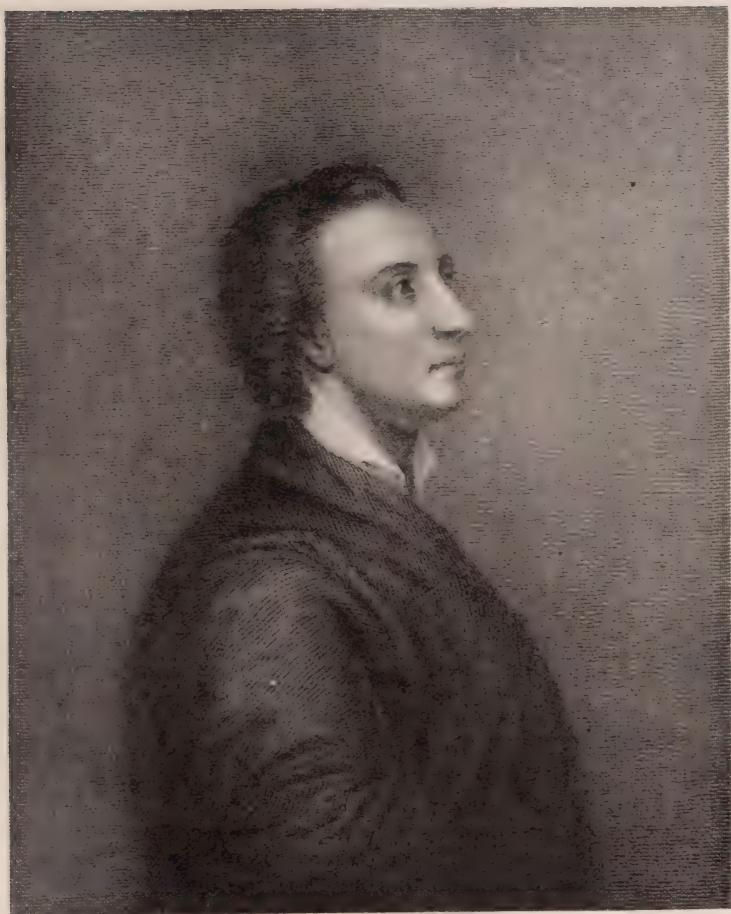
In his Paris thesis, recently published by Bonvalot-Jouve, Dr. Henri Meuvret has written interestingly on the subject of tuberculosis in French prisons in connection with a general survey of the penitentiary system, and the details, but little known, of the not uninteresting lives of the prisoners. His conclusions are that the mortality from tuberculosis is high, being thrice as great as among the unincarcerated, and that the matter of detention, whether in a cell or in a penitentiary, does not affect the high death-rate. Again, in the colonial penitentiaries, situated in Corsica, where agricultural pursuits are demanded and one would expect some amelioration of conditions, the mortality is not lessened. The one exception is the prison at Fresnes, which, on account of the ultra-hygienic conditions and a mild regime to which the prisoners are subjected, may well be described as the ideal prison. The true reason for a greater frequency of tuberculosis among prisoners can be easily explained on the ground that nearly all of them are more or less damaged by alcoholic and other excesses, and are often the victims of the disease before entering the prison. Considering how deplorable is such a condition, one can readily see with what ease the tuberculous germ enters so inviting a soil, and just why a disease, which elsewhere is to some extent successfully combated, pays so high a tribute to death in the prisons.

Of the life of the prisoners at Fresnes—only cells are in this prison—a detailed account is given. On his arrival from Paris, the prisoner is subjected to certain formalities: douche bath, anthropometry, etc. Cleaned, dressed, numbered, and provided with one of the 5,500 volumes in the library, he is conducted to his apartments—that is to the cell which he will henceforth occupy. Three meters high, four meters long and two and a half meters wide, the cell, of which a model was shown at the Exposition of the International Congress on Tuberculosis in 1905, alongside a model of the best room of a wealthy merchant's house in the Champs-Élysées district of Paris, is perfectly lighted by a window provided above with a casement which the prisoner can open or close as he sees fit. The angles of the wood-work are carefully rounded and the walls are painted white. The superior cleanliness of the room, together with its arrangement, makes it not unlike an operating room in a modern hospital. On one side of the cell is an iron bed provided with a straw bolster, two sheets, and one blanket in summer and two in winter. In a corner, on a what-not, surmounting a row of pegs for hats and coats, there are an enameled washstand, a fork, a knife, a goblet, two plates and a bottle. In another corner is a lavatory, the bowl of which is of enameled faience and the flushing on the most modern plan. Against the wall, opposite the bed, is a small table which can be raised or lowered at will. A wooden chair is chained to the wall. The air in the cell is purified by means of a ventilator which has the capacity of sixty cubic meters an hour. In winter the temperature is maintained at 15° C.

Directly the prisoner is in his quarters, what is exacted from him? Work, but not the sort that may be uncongenial to him; for a matter of

great importance to the authorities is not to make light of his former business pursuits. In case his predilections are in the manufacturing line, he is put to work on one of the following articles, his choice in the matter receiving due attention: paper balloons, small fans, metal purses, metal clasps, chairs, engraving on copper, and other useful things. The government retains 50 per cent. of his earnings for maintenance, 25 per cent. is placed to his account, to be turned over to him on leaving, and the other 25 per cent. is his to spend on dainties; for in case he prefers something better than the ordinary fare, he can satisfy his wants at the canteen where things are sold almost at cost. All that he has to do in the matter is to give his order and, provided it does not exceed 60 centimes a day, no objection is raised to his expenditures. In summer he arises at six, in winter a half-hour later. His toilet completed, his bed made, he is ready for his daily work. It is not difficult to see that the prisoner's life is not one of durance vile. He is an object of solicitude. Thanks to precautions taken by the authorities, the rigorous winters are ameliorated for him; congenial work, without causing fatigue, occupies his time; he even finds the means to save some money. In case he is ill, medicines of the best quality are given him, and the best medical service in the town is enlisted. In these circumstances a prison is no longer a place to be hated by the incarcerated. The morale of the prisoner is not so greatly affected as it would be in less desirable conditions, and the result is that he feels but slightly the degradation that a less friendly hospitality would entail.

HISTORICAL NOTES.



Mark Akenside.

DR. MARK AKENSIDE.

Didactic poetry which was read with so much enjoyment in the 18th century, found an excellent champion in Dr. Mark Akenside. His "Pleasures of Imagination" takes us back to a time when moralizations were in vogue to elevate the tone of society and give solace to those who in the daily grind of life had somehow overlooked the importance of the gentle exercise of man's resources. The gentility which pervades this long-winded poem cannot be questioned; and as for interminable advice as an incentive to achieving a happier outlook so as "to face the unknown with a cheer," there are so many indications throughout its Four Books that the modern reader feels quite rebellious under the overweight of such undesired gratuity. But though digestion of so large

a quantity of optimism falls on the modern mind, we must not forget that in the century in which the poem was written, there were no choice spirits like Schopenhauer and Nietzsche to accustom the people to the advantages of a heaven of pessimism. Be this as it may, "Pleasures of Imagination" invites criticism on other grounds, for while it is not autobiographical in the usual sense of the word, it is quite personal enough to be thought a true transcription of the poet's innermost thoughts—his philosophy of life. And herein it is more than insincere, for the man who fathered it was so decidedly mundane that we are not subjecting him to any violent prejudices when we say, that if he ever got any pleasure out of his own imagination, unassisted by the consoling thought that his practice was a lucrative source of income, it must have been some years before he arrived at man's estate.

Dr. Mark Akenside's career as practicing physician was not unusual in any respect. He studied at Edinburgh, then at Leyden, where he obtained the degree of M. D. May 16, 1744; the formation and growth of the human foetus being his dissertation. Soon after his return from Leyden he began to practice at Northampton, where his success was not great. The one incident of his sojourn in that town was an amicable controversy with Dr. Doddridge concerning the opinions of the ancient philosophers with regard to a future state of rewards and punishments, in which Dr. Akenside supported the firm belief of Cicero, in particular, in this great article of natural religion. After leaving Northampton, he moved to Hampstead where he resided upwards of two years and then finally went to London. At first he had but little practice, and would probably have been reduced to difficulties had not Mr. Dyson, his intimate friend, generously allowed him £300 a year, which enabled him to make a proper appearance in the world. In time the doctor acquired considerable reputation and practice; he became a Fellow of the Royal Society, a physician to St. Thomas's Hospital, was admitted to the degree of Doctor in Physic in the University of Cambridge, and elected a Fellow of the Royal College of Physicians in London, and upon the settlement of the Queen's household was appointed one of the physicians to Her Majesty.

All this reads very nicely and makes one feel that the gradual rise of Dr. Akenside was conducive to all the amenities of life. We picture him contented and at peace with the world. The snarls that enter so largely into the lives of those who are continually struggling for an existence—twists that upset one's temper—were foreign to his nature, we conclude; and especially are we predisposed to this opinion when we limit our investigations to the number of his titles, or draw conclusions of what his life really was from the wisdom and philosophy of his famous poem. But the reverse side of the picture calls a halt on our enthusiasm, for on examining the details of his life we find that despite the exalted tone of his didacticism, he was but a poor follower of his own preachings. Even when he was in enjoyment of a large and lucrative practice he did not disdain to receive the £300 Dyson had advanced him when he was in dire need. His meannesses were many, his irascibility was unpardonable; loveliness and high-mindedness were not ingredient parts of his make-up. Smollett saw opportunities in his many failings to delineate a character; hence the "Doctor" in "Peregrine Pickle," for which the reading world is not ungrateful. To-day our interest in Akenside lies in the fact that he was one of the few medical men of all times who has written good poetry. But when we say this we have said all, for his career as a practitioner has nothing to commend it; indeed, in spite of his successes, his low lights were many, his high lights few.

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EDITORIAL.

TUBERCULOSIS AND THE CREATIVE MIND.

That the subject of tuberculosis is in no danger of achieving the undesirable reputation of tiresomeness, which has been the fate of the many diseases exploited *ad nauseam* by the tyros who buzz so unremittingly around the torch of science, is instanced for us, not only by the many and diversified methods of treatment as put forth by the qualified and unqualified physician, but by the keen desire of many humanitarians to advance their inexpugnable, but often visionary, ideas in phrases that have written across their apparent disinterestedness, the unquenchable desire to lure fame from her stronghold. Energies directed against the dissemination of any disease of the gravity and destructibility of tuberculosis, should not be decried in quarters whose watchword ought to be the true spirit of science; and far be it from us to lessen, by any unkind word, the enthusiasm that informs all deeply thought-out attempts at amelioration; but it must be admitted by all who have steeped their minds in the somewhat turbid waters of the medical and lay theories as they ebb and flow from the investigator to the disease, that obfuscation of a subject is never the forerunner of clarity of thought. To call a halt to the depressive moods engendered by a realization of the futility of many of these theories, a German scientist, by the name of Dr. Köhler, has come to the front with a most diverting paper, "Zur psychologischen Analyse in der Medizin" in the *Beiträge zur Klinik der Tuberkulose* (vols. viii and ix), in which he introduces enough ideas to show that the German mind sees in the psychological aspects of tuberculosis, an illimitable field that might illustrate the good points, if not the advantages, of a tuberculous condition as an agent in the productivity resulting from creative genius. And since many of us are different from Dr. Sprague in "Middlemarch," who thought he could "grapple with every disease and throw it down," and are modest enough at times to admit defeat, we are not averse to

turning to a consideration of the lighter, but more fascinating, phase of a much-discussed malady in its relation to psychology.

When we examine this subject in all seriousness, and attempt to ascertain in how far the creative minds of certain men of distinctive parts, who could not have been "mere machines or a fortuitous conjunction of atoms," were exalted into greater activity by intimate association with the disease, we are at once reminded of the work of three men who undoubtedly did their best work when their constitutions were being undermined. These three men are Keats, Chopin and Stevenson. That Keats had the uplift without which good poetry cannot be effected, is apparent in his best lines; and that his energy must have been beyond the ordinary to have written what he did by the age of twenty-six, is beyond dispute. But the energy he showed was no greater than that of other poets, and if there was a feverish haste to accomplish much as an outcome of a peculiar psychic state due to tuberculosis, his published works are far from betraying the hall-marks of an imagination derived from "vast plans." Even in his highest flights of poesy, his words are tempered by a sobriety that indicates none of those untoward effects of a diseased body on an uncommonly receptive mind. And as for the creative faculty, it is not a distinction with Keats, for though he can hold his own as one of the greatest weavers of English melody, there is not to be found in any of his poems, a character of such distinct outlines that anyone can say that it is so original, so forceful, that none but a creative mind could have fashioned it. The vibrant tones of John Keats's voice came from his genius and not from a constitutional derangement; and if it be true as we contend, that in his writings there is a complete absence of what is generally understood as the creative element, but many illustrations of what the poet himself said when he wrote that "fine writing is, next to fine doing, the top thing in the world," we have one of the best instances to down the scientific twaddle about tuberculosis as an incentive to the efflorescence of the creative faculty.

When we study the other celebrated literary consumptive, Robert Louis Stevenson, we are brought face to face with facts which again disprove our German confrère's contention. Stevenson in all his writings is the contained middle-class gentleman as he obtains in England. There are no vagaries in his handling of subjects; no frenetic over-reaching of the powers which his sanity, which never deserted him, knew exactly how to delimit. His style is irreproachable; but when this is said, all that is within the bounds of just criticism, has been pronounced; for in the long list of his printed works, though the characters are many and quite diverse, there is not one that gives the slightest indication that it is the offspring of a creative mind. In fact, with all his undeniable

genius, he failed of one thing, and that was the making of a character of flesh and blood, such as would place beyond dubiety the question of that greatest of all faculties—the creative. Again, in taking up the third consumptive, Frédéric Chopin, we have a better illustration of national traits than a condition that should invite the serious attention of the investigating physician, for the peculiar bent of the mind of this musical genius was of the sort that expressed the sadness, the hopelessness, of a lost cause,—the restoration of dismembered Poland. The melancholy strain throughout his musical productions, attenuated at times to a condition of effeminacy, is diametrically opposite to the optimism of the “vast plans” which are supposed to be peculiar to consumptives. Nor are there in what is considered his best achievements, indications of such undeniable creative faculties as are evidenced in the musical themes of Mozart, Beethoven and Wagner.

In looking over the long list of literary men and women who have created characters of distinct outlines and substantial proportions—Dickens, Thackeray, George Eliot, Tennyson, George Sand and Balzac—we have indisputable examples of the creative mind. Although by no stretch of the imagination can it be said that in any of these writers was the tubercle present at one time or another, all of them had an extraordinary amount of optimism, the engineering of “vast plans,” and an intense desire for work which, while it may not have been frenetic, was certainly done in no leisurely way; otherwise their accomplishments would not have had as assets, the forty volumes of the “Comédie Humaine,” the eighty odd volumes by George Sand, Tennyson’s “Idylls of a King,” and the many three-volumed novels by Dickens, Thackeray and George Eliot. The characters these writers depict live not only in the popular estimation but are the best portraits that the creative mind of the nineteenth century effected. Who can deny the finish and completeness of the life-like portraiture of David Copperfield, Guinevere, Pèr, Goriot, Becky Sharp, Consuelo, and Romola? And against these virile likenesses, the psychologists, not only of Germany but also of England and America, would have us line the shadowy creations of Keats, Stevenson and others, to prove their theories that only the “tuberculous mind” can create lasting counterfeits of living men and women.

DOCTORS AND LAWYERS.

The alliances which are forming throughout the United States, between doctors and lawyers, to effect radical changes in the attitude of one profession to the other, so that oneness of thought will obtain in all medico-legal cases which heretofore have been the undignified text for much

unnecessary wrangling, are undoubtedly a step in the right direction; for out of the intermixing of the best medical and legal ideas there may be brought forth a temper, in the trial of contentious cases, that will not be the undignified something it now is, when doctors and lawyers gird at each other in the court room. That the new situations arising from the complete understanding between the hitherto opposed professions would be for the ultimate good, not only of the doctors, but also of the condemned and the community at large, goes without saying; but since it is a fact that lawsuits are tried only in a manner that befits the legal mind whose distinctions are labyrinthine verbal quiddities in achieving exoneration or condemnation of the prisoner, it is well here to pause in our enthusiasm and try to justify ourselves for the undercurrent of feeling which impels us to remark, that we are fearful these alliances will be about as effective in elevating the regard lawyers have for doctors' medico-legal opinions, as the many Congresses held at The Hague have been for the peace of the world. And it is with no intention to belittle lawyers or their splendid records as "stars" in litigious cases, that we recall most humiliating scenes in various court rooms, where the really scientific opinion of the doctor was riddled by the superlatively acute legal mind, to the confusion of the doctor, the vast amusement of the jury, and the complete disrespect of all, from the judge to the human scum that frequents the court room, for the worth and value of the art of medicine.

The Tulkithorns and the Sampson Brasses are not so rare to-day as an unobserving and conglomerate mass of uncritical reformers would have us to believe. They abound just in the same proportions as formerly, and though there are indications of many changes in other walks of life, so decidedly adamant are the rules which govern the methods which law must pursue, and so invariably have they been followed by all its disciples, that we are not by any means proclaiming open hostility with it, when we say that the characters created by Dickens are as true to-day as when this master of the pen drew them. In sum, the idea we wish to convey is that law is but one thing, namely, the solution by hook or by crook, of all the most involved questions of casuistry. And against this Chinese Wall of implacable hatred of all divagations, we pit the doctor's opinion fresh from the laboratory, or so technically involved that it easily becomes a maze of bewildering digressions when the legal talons shake it into that distant semblance of the truth, which is so beloved of the lawyer but so disastrous to the value of a medical statement derived from a science that, by reason of its incompleteness, can never adhere to

the rigid rules of the teachings of what might be called medical positivism.

Recently Mr. Bernard Shaw delivered an address before the London Medico-Legal Society in which he advocated the "socialization" of the medical profession, so that it would be possible for the doctor when not paid by the patient but by the State, to follow the practice of the art of medicine with honesty and truth; things at present impossible on account of the insistence of patients to receive treatment when treatment is unnecessary, and, especially, inopportune because a doctor to-day is of no higher rank than a tradesman. In connection with these timely remarks we would say, that were lawyers employed and paid by the State, instead of by their clients, there would take place many gratifying changes; for the State could prevent the present attitude of law to the science of medicine by making compulsory an instructive course in its many ramifications; and could institute, by these enlightened means, a better phase in all legal tilts than obtains to-day, when the irresistible plea made by money creates so great a bias for a client that no other course would seem to have any justification. Only when this happier state from a modern conception of socialism is evolved will there be the proper *rapprochement* between doctors and lawyers to effect a medico-legal society of far-reaching benefits.

Now though the law is remiss as regards its appreciation and understanding of what modern medicine stands for, the art of medicine itself is not blameless, judged by the manner in which its advocates attempt to introduce its teachings into the circumlocutory proceedings of the court room. Very few doctors have enough appreciation and knowledge of law to make good witnesses; and though at times their professional honesty might be impugned because of unjustifiable leanings, theirs is not so much a case that merits severe criticism because of a defective sense of honor, as an instance warranting considerable scoring for allowing their minds to drift away from other studies than that of their chosen profession. As yet we have few if any medico-legists in this country, and though societies are rife throughout the length and breadth of the United States for bringing doctors and lawyers into closer apposition, the curricula of medical colleges appear, by their indifference, to make light of the matter, for who has ever heard of an American counterpart of the European graduate medico-legist? And until he arrives we will have to content ourselves with medical statements in the court room, which are not unlike Sganarelle's explanation of his daughter's (Lucinde) dumbness in Molière's "Physician in Spite of Himself:" "Thus these vapors, of which I speak, passing from the left side, where the liver is, to the right side, where the heart is, it so happens that the lungs, which

in Latin we speak of as *armyan*, communicating with the brain, which in Greek we style *nasmus*; by means of the *vena cava*, which in Hebrew we call *cubile*, in their course meet the said vapors, which fill the ventricles of the omoplata; and as the said vapors—please follow this argument closely: and as the said vapors are gifted with a certain malignity—listen well to this I beseech you.”

THE CASE OF LOUIS BAZY.

In these drab days of rectilinear monotony, when the element which arrests us almost daily takes its cue with exasperating invariability from the apparently inexhaustible store-house of anecdotes relating to the acquisition of fabulous wealth, it is with a sense of relief that we read of the inspired moments in an individual's life—moments that must bulk largely ever after, no matter how meagre the days of anything that could be considered outstanding. Heroics, which one would think on account of their transparencies would not merit admiration, are often unduly honored by an applauding and indiscriminating public on account of an irresistible appealing force. Now though the blatancy of heroics carries emotional men off their feet, it is fortunate for all, that when this sort of artifice is judged in the calm of sober thought by those whose lives are devoted to serious pursuits, it looses its trappings of alluring romanticism and reveals itself bare of everything but a deplorable meritriciousness. And in no walk of life is intolerance of the strutting vaporings of counterfeit superlativeness in the matter of heroism stronger, than when the medical temper is assailed by an apocalyptic description of an occurrence that should come in only for a very limited mention. Yet despite the stubbornness of the medical mind to prostrate itself before the glitter of an act of really ordinary worth, and although the spirit which prevails among us is opposed to all fulsome self-praise of deeds that have on their face the undesirable quality of vainglory, it is with no feeling of resentment that we have read of the honors which have fallen to Louis Bazy; for here we have a perfect illustration of a heroism whose unobtrusiveness must move all to an appreciation of what derided human nature can do in circumstances that call for self-abnegation.

The recital of what Louis Bazy did at his post of duty as interne at the Necker Hospital at Paris, while assisting Dr. Iselin during an operation, has none of those high lights to which the modern reading world is accustomed, when certain acts which pass for heroism are described in dithyrambic prose. For when he continued in his capacity as assistant after his eye became infected with pus, there could have been no other

thought in his mind, than the unimportance of what had happened to him in comparison with the gravity of an operation which demanded his unceasing attention until all danger to the patient was past. Theatricalness before an appreciative audience does not enter into this picture; only the modest and conventional lights incident to an operation are here; but through the obscurities with which the atmosphere is shot there shines, with rare effulgence, the steady flame of duty that emanates from the possessor of high resolves in the performance of work which might entail martyrdom. An easy-going world has it that a sense of duty may be exalted into the rarefied atmosphere of a foolishly-conceived idealism, by carrying its true meaning beyond the confines of reason, but though this charge might hold when the frenzy of an insane desire for notoriety obsesses one, it is without foundation in the exquisite self-denials as conceived by Carroll, Reed, Lazaer, Herbelin, Huchard and Louis Bazy.

The lesson culled from so Spartan an attitude towards exactions, incident to the exigencies of a surgical operation, is one that is informed with the only message that interprets the simple philosophy of the practice of medicine. It can be read aright by every disciple of the medical art, for no matter how pleasant and agreeable has been his career, it has exposed him to dangers, which, perhaps, an inborn cowardice would have impelled him to avoid but which a sense of duty inherent in his calling prompted him to face with courage. But just because a certain sense of duty is not unusual in the many examples of the medical men whom we meet daily, our gratitude to the latest medical hero should not be lessened, for what he did is not done any too often to make us forgetful how rare, even in the domain of medicine, is the iron stamina that can refrain from wincing when buffeted by a fate that shows no leniency. And the reward in the shape of the Legion of Honor Cross, which France recently bestowed on him, was not by any means compensation for the loss of his eye, but a slight attempt on the part of a strong Government to express its approval of a son who drew his sap from its most virile elements; and a further illustration that appreciation of the quiet virtues is not withheld, when the educative forces of a Government are great enough to recognize the worth and value of fortitude and self-denial.

NEURASTHENIA OF SCHOOL TEACHERS.

One of the most startling facts as to our public schools is the recent revelation of the large percentage of retired teachers in New York City who have neurasthenia recorded as the cause of their disability. It is indeed somewhat alarming that there should be a condition of affairs which causes such a nervous state, for if there is anything which hope-

lessly unfits one from managing children it is neurasthenia. Even babies are excited or soothed as the nurse is nervous or phlegmatic and sensible mothers always prefer nurse maids who are slow even if dull. A neurasthenic teacher, even in the early stages, has a deplorable influence upon pupils and for the sake of both the disease must be prevented.

The cause of teacher's neurasthenia is rather obscure when we reflect that teaching is not only a most wholesome employment of itself but that it is the normal and natural life of woman, who has developed a genius for managing children as a result of the evolution of ages. It is part of her nature, for without it the family would have perished. None the less, it is a nervous strain, and many a poor woman suffering with "nerves" has undoubtedly been wrecked by the worries and jars of raising a brood of wriggling youngsters. Nothing is harder to bear than the noise of other people's children, and we must suffer unconsciously from that in our own households. The strains of the school room must then be quite serious.

Nevertheless, there must be other causes which equally affect the pupils, for their nervousness is a subject of frequent comment in medical literature, and every family physician, almost as a matter of routine daily practice, is compelled to remove some little sufferer from school because of ill health, chiefly "nerves." It is a deplorable state of affairs, because the ideal school should build up, strengthen and develop the physique as well as train the mind. It would be like the millenium if we could prescribe school for the weaklings of a family, whereas now only the strong can stand the strain.

The poor physique of normal school graduates has been known a long time, but Dr. Elizabeth Jarrett (*Medical Record*, April 1, 1908) has shown that many are unfit to take up the profession of teaching for which they were trained. Much of this is known to be due to improper food. Insufficient nitrogen has prevented proper growth and development. Poverty is at the basis of it of course, and instead of advocating public feeding, we should advise these cases to do what is done by every boy too poor to attend college—to work at something else. The calling is so wearing at present that none but the robust should aspire. And there must be something radically wrong with the whole system. Undoubtedly there is not sufficient outdoor exercise and bodily training and this emphasizes the lack of nutriment.

Perhaps the hygiene of the school room is not wholly understood, in spite of the enormous amount of study which has been given to it in the last thirty or forty years. Physicians and teachers seem to have had their attention directed more to the physical condition of the pupil. The defects of the children have always existed but have only recently

excited comment and bid fair to blind us to their environment. It is quite well therefore that Dr. Geo. W. Vandegrift (*Medical Record*, June 13, 1908) should warn against allowing this new pendulum to swing too far. His article on The New School Hygiene is so timely as to deserve wide attention for it emphasizes the need of smaller classes, shorter sessions, more recesses for relaxation outdoors in adjoining parks, and many other things the absence of which is in great part responsible for the neurasthenia of the teachers themselves. He very properly blames the medical profession for not taking more interest in school affairs. If every family physician who has been compelled to remove little patients from school would have devoted the same amount of labor to removing the injurious factors from the schools, the pupils would now be reaping the benefit. It is to be hoped that medical literature will now contain more on the subject from the standpoint of the family doctor.

It might be well to hint at one point on which we are going to extremes. There is no doubt of course that a well lighted room is essential but we must remember that in the last few years it has been definitely determined that too much is a cause of nervousness, and this may fully account for the condition of many a teacher and pupil. Architects are now studying the matter to the end that the headachy glare of the typical school room may be abated.

LITERARY NOTES.

DR. Paul Emile Lévy's new book, "Neurasthénie et Névroses, leur guérison définitive en cure libre" (Neurasthenia and the Neuroses, their Complete Cure by Liberal Treatment), recently presented to the French Academy, is characterized by the same saneness of thought which made his former work, "l'Éducation rationnelle de la volonté, son emploi thérapeutique" (The Rational Education of the Will as a Therapeutic Measure), an arresting effort in the field of psychiatry. The author not only advocates the repeated application of moral and re-educational treatment in neurasthenia and hysteria, but finds it also of decided benefit in neuralgias, sciaticas, gastric disturbances, and in spermatorrhea. Of special interest is the résumé of the subject in the last chapter, in which the author shows in how far his personal conception of the neuroses and their therapeutics, differs from that originated by Dubois; thereby pleading for correction and amplification of some of the theories of the well-known Swiss psychiatrist. The lesson culled from a careful perusal of this chapter is the necessity of adding to moral and re-educational treatment, "a free cure" (*une cure libre*): that is, the afflicted one should be allowed to continue in his daily occupations instead of being subjected to

the rigorous methods which even to-day are wrongfully considered the classical means of isolation. Surely this is a most important evolutionary stage in the treatment of the neuroses from the point of view of moral therapeutics. To sum up, we have here ideas of great practical interest, and what should not be overlooked is the fact that the author was among the first to explore a dark and neglected corner in the province of psychiatry which, before his labors, had received but scant notice.

DR. Cabanès who is already well known not only to doctors but to the general public on account of his interesting books "*Les Indiscrétions de l'Histoire*" and "*Le Cabinet de l'Histoire*," has added another book to his list which bears the title "*Moeurs intimes du passé*" (Personal Habits in the Past), and which sets forth, in no unentertaining way, the methods pertaining to domestic and individual hygiene as practiced by the Greeks and Romans; by the men and women of quality in the Middle Ages as well as the common people; and by the people of modern times until the beginning of the nineteenth century. The salient point brought out by the author is that though the Greeks and Romans had advanced ideas as to hygiene, our ancestors failed to profit by what should have been to them a heritage of common sense. The heating of houses, so well understood by the Romans, was practically unknown to them; the handkerchief, an accessory to the toilet from the earliest times, was unknown to Peter the Great; and as for mouth washes and gargles, fresh or fermented urine had a popularity that seems inconceivable to us to-day, when the intellectual advancement of the people in the eighteenth century is considered. The last part of the book is devoted to the means which were taken by those in authority, only a century and a half ago, as to the disposal of human excreta. The Greeks and Romans had public and private latrines, but though one would think this might have been a good precedent, it was not; for the inhabitants of Paris and the provincial towns of France submitted to nuisances, the reading of which fills us with horror. If there was any objection on the part of the citizens to these hygienic barbarities it was on account of the odors; not at all because these direful conditions might affect the public health.

ORIGINAL ARTICLES.

THE DISMEMBERMENT OF TRADITIONAL HYSTERIA: PITHIATISM.*

By J. BABINSKI, Paris.

Having taken the first steps of my neurological career at the school of the Salpêtrière, where I had the honor to be chief of clinic of Charcot from 1885 to 1887, I was from the beginning imbued with the ideas about hysteria which were taught there at that time, and which until recently have been almost unanimously admitted.

These ideas I at first accepted without reserve, but later, struck by certain facts with which they appeared to me difficult to reconcile, I was led to doubt their exactness and from that time on I proposed, without prejudice, to submit to close analysis all the facts the value of which it was possible for me to estimate. If the results of my investigations have led me to abandon the doctrine of my illustrious master, I have nevertheless retained—this I would emphasize—a profound admiration for the great neurologist whose studies of hysteria, important as they are in spite of the errors which they contain, constitute but a small part of the imposing monument due to his labors.

My studies, continued through some ten years, ended in 1901 in a communication to the Neurological Society, in which I sustained the thesis that there had been placed in the frame of hysteria disturbances which did not belong there, and I then indicated the limits which, in my opinion, should be assigned to that neurosis. My view has been adopted by Dutil and Laubray, authors of the article "Hysteria," in the second edition of the treatise Charcot-Bouchard-Brissaud. My thesis I again developed in a lecture before the Society of Internes of the Hospitals of Paris in 1906.** Again I presented it to the Congress of Neurologists at Geneva in 1907. Finally, my thesis was discussed in April and May of the year 1908 at the Society of Neurology in Paris, and I had the great satisfaction of seeing many of my colleagues, among others, Brissaud, Dupré, Ballet, Souques, and Meige, share my opinion completely or almost completely. I may say even that on the

*Translated by Charles Gilbert Chaddock, M. D., Professor of Diseases of the Nervous System, St. Louis University School of Medicine, from *La Semaine Médicale*, January 6, 1909.

**Alienist and Neurologist, St. Louis, February, 1908.

central point the majority of the members of the Society were in accord with me, and that the opposition offered by certain members was concerned only with secondary questions; perhaps this opposition was merely the result of a simple misunderstanding and due to the fact that my ideas briefly presented were imperfectly understood. I hope that in presenting them from another point of view they will become clearer to my opponents.

All physicians recognize at the present time that the domain of traditional hysteria has been unduly extended, and that at least the power attributed to hysteria of being able to copy various maladies, of doing everything, as the saying formerly was, has been singularly exaggerated. This fact is henceforth established; but it seems to me interesting to seek the reasons which led us to abandon the ancient notion. In my opinion the excessive extension given to hysteria was due to three principal causes: (1) Errors of diagnosis resulting in calling organic affections hysterical; (2) Underestimation of the importance of malingering, so that in the absence of perfect surveillance certain phenomena were attributed to hysteria which depended on simulation; (3) Confounding nervous states which should be distinguished from one another. I shall try to show the correctness of my opinion by a minute analysis of the facts and by examining successively the three causes of error which I have just enumerated.

1. In order to prove that some organic diseases have often been considered hysterical, it will suffice to take hemiplegia as an example. Not only do I affirm without fear of contradiction that cases of organic hemiplegia have often been regarded as hysterical, but I maintain that errors of this kind were formerly inevitable because we had at our disposal no sure means of distinguishing these two kinds of paralysis. It was formerly admitted, in fact, that hysterical hemiplegia could reproduce, feature for feature, the picture of organic hemiplegia, and that extrinsic characteristics,—like the age of the patient, the presence or absence of a concomitant cardiac affection, of syphilitic antecedents, of pretended stigmata of hysteria, the circumstances attending the beginning of the paralysis,—were the only facts upon which the diagnosis could be based. However, now the contrary is the truth. I should have no difficulty in finding patients suffering with hemiplegia manifestly organic, who nevertheless are young, present no sign of cardiac disease, no indication of syphilis, having on the side of the paralysis anesthesia and narrowing of the visual field, and in whom the hemiplegia followed an emotion; inversely, I have seen some cases of hysterical hemiplegia in aged persons with heart disease, presenting no disturbance of sensibility, and in whom the paralysis was not preceded by emotional disturbance of any kind. Incontestably, on the one hand, the rôle of emotion in the genesis of hysterical accidents has been, to say the least, exaggerated. On the other hand, sufficient account has not been taken of the influence of this cause in the development of organic affections.

It might, however, be said *a priori* that perturbation of the circulation by an emotion might cause rupture of the wall of a vessel at a point previously deteriorated; and observation has demonstrated this fact.

As to hemianesthesia, Bernheim has the merit of having maintained for a long time that it was usually of suggestive origin; and I believe that I have brought forward new arguments in support of this view. I have shown that depending upon the manner in which the patients were questioned and examined, it was possible, in so far as concerns the pretended stigmata, to get results totally different; and I can say that for years I have failed to find these stigmata in hysterical persons that had not previously been in contact with persons capable of inducing them by suggestion. It is true it may be objected to this that sensitivo-sensorial hemianesthesia, whether connected with suggestion or not, indicates hysteria. This is proven; but it is none-the-less exact that one can easily induce these phenomena in a large number of subjects; that it is even especially easy to develop them in patients, a fact easily understood; that one can in many cases artificially associate a suggestive hemianesthesia with an organic hemiplegia; that usually this hemianesthesia has its origin in a defective manner of conducting the medical interrogatory; and finally that, owing to the frequency of hysterio-organic associations, the presence of hemianesthesia in a case of hemiplegia in nowise solves the question of its nature.

Contrary to what was believed formerly, only the intrinsic characteristics of hemiplegia can lead to a correct diagnosis. If they were formerly ignorant of this fact, sidetracked, so to speak, it was because neurologists did not know how to estimate the state of the tendon reflexes, notwithstanding the fact that these reflexes had long been the object of systematic examination; and also because they had not at their disposal certain objective signs which I have since discovered. In an initial article on this subject, published in 1893, and since that time on many occasions in communications and discussions in the Neurological Society, I maintained that hysteria could not modify the tendon reflexes and that consequently pure hysterical hemiplegia is never accompanied by exaggeration of the tendon reflexes. This opinion was at first actively opposed, but little by little its adversaries have become less and less numerous, and the last discussion of this matter by the Neurological Society shows that to-day all my colleagues are in accord with me. Thus, in a case of hemiplegia unilateral exaggeration of tendon reflexes, a symptom formerly known but the value of which was unknown, permits it to be affirmed that one is dealing with an organic affection of the central nervous system. There is no need to insist on the new objective signs*—the toe-phenomena (extension of the great toe and the fan-sign), the combined movement of flexion of the trunk and thigh, the sign of the platysma, muscular hypotonia, the phenomenon of pro-

**Vide Differential Diagnosis of Organic and Hysterical Hemiplegia, Interstate Medical Journal, August, 1905.*

nation,*—all of which also lead to a sure diagnosis. These notions are universally accepted; therefore I am entirely authorized to affirm, and this is the essential point of the subject with which I am concerned, that only a short time ago we possessed none of the means actually at our disposal of distinguishing organic hemiplegia from hysterical hemiplegia, and that, therefore, formerly numerous errors in diagnosis were made.

If now we reflect a little upon what has gone before, we shall easily recognize the consequences of such errors, of other errors which they engendered, and the influence thus exercised on the traditional conception of hysteria. Here we approach one of the most interesting aspects of the history of this neurosis. Let us go back in thought to a time when we did not possess the notions which every physician now utilizes in order to recognize the nature of a case of hemiplegia. Then, for the reasons which I have just indicated, there were patients afflicted with organic hemiplegia, who were considered simple hysterics. It will suffice for those of my readers that have had some experience to question the memory in order to recall facts of this kind. If an attempt was made to cure such patients by hypnotism, a method which was formerly much in vogue, the result was complete failure, no matter what perseverance was exercised; and consequently it was naturally concluded that hysterical manifestations were often refractory to psychotherapy, a conclusion which seems to me to be unjustified. Besides, among such hemiplegics there must have been some who presented—a thing not rare in organic hemiplegia—vasomotor disturbances, hypothermia on the paralyzed side, and the inevitable deduction was that hysteria could produce phenomena of this kind; and from this to the conclusion that hysteria might also produce erythemas, phlyctenas, edemas, hemorrhages, and even cutaneous gangrene, was but a step which observers did not fail to take. But this is not all; if hysteria is capable of producing such disturbances in the skin, why should it not also produce similar ones in the viscera; why should there not be hemophthisis, hematemesis, melena, hematuria, and even cerebral hemorrhage, hysterical in nature? For example, one had to do with a young girl with hemophthisis, in whose family there were no tubercular antecedents, whose general condition was satisfactory, and in whom, a condition sometimes observed in the beginning of tuberculosis, there could be discovered no definite stethoscopic sign of pulmonary

*The sign of *pronaton* has not yet been described, to my knowledge, in English; it consists of pronation of the hand which occurs spontaneously after the hand has been passively supinated, or of pronation induced as follows: with the patient's hand resting supine and inert in the examiner's hand, if the observer gently and repeatedly toss the patient's hand, allowing it to fall again into his own, the patient's hand soon becomes pronated. This is very striking in certain cases of organic hemiplegia, when both hands are simultaneously and similarly manipulated,—pronation of paralyzed, supination of sound hand. The phenomepon seems to be due to diminished muscle-tone with predominance of remaining tone in the pronators. Its value lies in the fact that hysteria does not alter muscle-tone. [Trans.]

lesion; if this patient were subject to hysterical attacks, if besides she presented a sensitivo-sensorial hemianesthesia, the observer was almost inevitably led to attribute the hemiphraxis to hysteria. Fever, even, if there happened to be any, did not cause such a diagnosis to be rejected; for it was quite natural, after having admitted that hysteria was capable of having a disturbing influence upon the centers of the tendon reflexes and on the vasomotor centers, to think also that hysteria was capable of inducing disturbance of the centers which regulate temperature. All these deductions, since they were logical, were made and accepted by the best minds. The only thing wrong in this was that there was an error at the point of departure, and for this reason the value of these deductions was *nil*. But it may be said that, though the directing idea was false, nevertheless it was capable of leading to the discovery of truths; for how is it possible to suppose that so many clinicians, among whom there were those of great eminence, could have allowed themselves to be so deceived? No matter how surprising it be, we are nevertheless obliged to bow before reality and to recognize that in this kind of facts the best observers deceived themselves. To be convinced of this it is only necessary to question our own memory and that of our confreres. There is scarcely a physician who cannot recall having committed, or having seen committed by his teachers, similar errors; and many of my colleagues have told me of such examples since I undertook my campaign against traditional hysteria. Such instances are cases of hemiphraxis, hematemesis, hematuria, fever, etc., which were for a long time taken to be hysterical by the most reputable physicians, but the organic nature of which was finally revealed. These errors, as I have just said, are in part explained by the false theoretical ideas which were anchored in the mind; they also are explicable because the facts upon which they may be based sometimes need to be observed several months before they can be classed with certainty where they belong, and many such cases are lost from view before the correction of the diagnosis is possible; finally, they are to be explained by the influence of tradition, from the influence of which it is difficult to escape. A colleague who thought he had seen an interesting case of hysterical fever asked me to use my good offices with the director of a neurological journal in order to have his observation published; having called his attention to the fact that his observation was not conclusive, he said to me: "I admit that my arguments are not conclusive, but I thought that the reality of hysterical fever admitted in classical treatises was not open to doubt, and it seemed to me that my case did not need further study." Thus it is the more difficult to eradicate errors when they are ancient and have been transmitted by tradition from generation to generation.

2. We continually find simulation in the history of hysteria. Moreover, this truth is not new; Charcot insisted particularly upon it. But if no one denies this in general, there are many physicians who in a given case allow themselves to be caught by lies more or less skillful,

and they are led to attribute to hysteria phenomena due merely to malin-gering. These phenomena of simulation should be divided into several groups. To one of these groups belong manifestations which are imitations of disturbances which suggestion induces, which persuasion cures—pithiatic (I shall indicate later the meaning of this term)—and which are nothing more than accidents (symptoms), like certain kinds of paralyses, contractures, anesthetics, etc., which by common accord belong to hysteria. It is impossible to distinguish objectively these two kinds of phenomena from each other. This is easily understood because they are produced by the same mechanism and because the only difference between them lies in the state of the mind of those who bring this mechanism into action: the simulator is conscious of the nature of his complaints and his acts, while the suggested subject is unconscious of them, or at most subconscious, and in a way is a semi-simulator. Wherefore, the question of simulation should be raised every time we find ourselves confronted by a phenomenon having the characteristics of pithiatic manifestations; but this question cannot always be resolved in a manner absolutely satisfactory, for it is certain that a large number of subjects considered hysterical are simply deceiving their friends and physician. Sometimes careful watching permits recognition of the fraud. For example, deception is evident if we see a presumed paraplegic standing up and walking when he thinks he is not observed. But simulators are usually on their guard and do not allow themselves to be readily unmasked. Upon what, then, can we depend to answer the question whether simulation rather than suggestion is in play? Upon reasons of a moral kind. Moreover, though it may seem paradoxical, I think that the obstacle encountered by psychotherapy applied under favorable circumstances and with perseverance in such cases should incline us to accept the hypothesis of simulation. And here is what I found my opinion upon: among the numerous cases that I have observed, psychotherapy has shown itself inefficacious only in subjects whose sincerity there were good reasons to doubt, either because they were supposed victims of accidents and demanding damages; or because they were poor dependents without occupation and habitation manifestly interested in prolonging their sojourn in hospital; or, finally, because they were persons of another category taken in *flagrante delicto* of lying and whose assertions were without value. However this may be, every case of this kind furnishes matter for discussion; but what in general is *not* open to discussion, is that the domain of hysteria has been singularly widened by innumerable instances of simulation like those to which I have just referred.

In the second group belong certain phenomena which are also fictitious disturbances but which are to be distinguished from the preceding because they cannot be induced by suggestion. Fever and anuria are examples. We are familiar with the various tricks employed to cause the column of mercury of the thermometer to rise artificially, and there is no doubt that many cases of so-called hysterical fever that have been

published are really instances of this kind. It is easy to discover the fraud; all that is necessary is to take the temperature with an ordinary thermometer oneself and to watch the subject attentively and continuously while making the observation instead of being satisfied, as many physicians are, with indications easily falsified by the person interested on the ordinary clinical maximal thermometer. The proof that observers were formerly often deceived is that now, since attention has been particularly called to this point, pretended hysterical fever has disappeared from the hospitals of Paris. As much may be said of so-called hysterical anuria.

The third group is made up of phenomena that are not fictitious, like those which precede, but real. They are instances of erythema, phlyctena, ecchymosis, ulceration, sphacela, edema. The fraud consists in that the subjects afflicted with these conditions pretend that they have developed spontaneously, while in fact they result from the application of some irritating substance, from the introduction under the skin of foreign bodies, from the constriction of a member by a cord, or from some other artifice. It is well to know that besides the cases in which fraud is in play for pecuniary gain, there are also instances in which the fraud is without an apparent motive, unless on the part of those who commit it, those whom Dupré calls *mythomaniacs*, it be a pathological desire to inspire curiosity, surprise, or sympathy; in short, to be distinguished in one way or another. A very large number of similar facts have been attributed to hysteria simply after the observation of pretended hysterical stigmata and because no other label could be found to apply to them. In relation to this point I would call attention to the witty and little-known remark of Lasègue: "Hysteria is a waste-basket into which are thrown all papers that cannot be classified." Vaquez has expressed a similar idea. At the present time, since we are on our guard, such deception is more readily detected than it was in the past. Recently Prof. Dieulefoy reported a remarkable case in point to the Academy of Medicine.*

But my contradictors doubtless will say that they are quite willing to admit that the field of hysteria has been inordinately enlarged by errors of diagnosis and because we were not sufficiently on our guard against deception; that they also recognize that now, contrary to what was formerly taught, vasomotor, secretory, and trophic disturbances, hemorrhages, fever, and anuria cannot be induced by suggestion; but all this does not prove that such facts do not depend in certain cases upon hysteria. Very true; but I have not yet finished by demonstration, and that is what I shall now attempt to do.

3. To recognize that among the disturbances which have been attributed to hysteria there are some which may be induced by sug-

*The case of a simulator whose simulation led to loss of an arm as a result of surgical measures undertaken to cure supposed neurotrophic lesions; whose simulation continued thereafter until he was shown to be indulging in self-mutilation with an escharotic. [Trans.]

gestion and others which cannot be so induced, is to say that the disorders called hysterical are not all of the same kind in their manner of production and that it is necessary to subdivide them; this, of course, is a departure from the ancient confusion.

(a) There are, then, phenomena which are characterized by the fact that they can be induced by suggestion. But I wish to emphasize, for this is essential, that it is not sufficient that a phenomenon be consecutive to a psychic disturbance due to the will in order to attribute that disturbance to suggestion. In order to do this justly, it must be shown that the will is capable of causing immediate cessation of the phenomena that the will has induced; for example, I am justified in saying that a convulsive attack is the result of a suggestion when, after having provoked it experimentally at desire, I am able to arrest it at will. When suggestion is thus understood, it implies the idea that the will is master of the disturbances which it induces and is capable of causing to disappear, as it were by reversibility, that which it has caused to appear. These two characteristics are inseparably connected; and though, as a result of certain circumstances, it is not possible in every case to establish their relation, it may be said in general that it is in the association of these two characteristics that each of them proves its reality.*

How shall we limit the domain of disturbances which suggestion can induce? By observing attentively suggestionable persons and by experimenting on them. The physician who wishes to gain a definite personal opinion on this point should choose by preference subjects similar to those that were formerly called "grand hypnotics" and whose distinguishing characteristic consisted in possessing the highest degree of suggestibility. It is possible to reach the same result by trying to induce in oneself or in normal persons willing to submit to such investigations the phenomena apparently pathologic which the will alone is capable of inducing and of

*The sense given to a word being a matter of convention, one is free to give the word "suggestion" a meaning larger than that which I propose. For example, here is a phobic who, after having heard a lecture on syphilis, is taken with that kind of a phobia of touch which psychotherapy cannot cure. Would you not say that this phobia had been suggested by the lecture? Granted. But, if in this instance we have to do with suggestion, we must admit at the same time that this suggestion differs essentially from another the effects of which may be made to disappear by persuasion, and that the term "suggestion" is thus applied to different processes for each one of which it would be well to have a distinguishing name.

Apropos of definition, I would recall that elsewhere* I have called attention to the fact that for some the word "suggestion" should express the act by which we try to cause to be accepted by another any idea, whether unreasonable or reasonable; that others on the contrary think as I do that it would be preferable to give to the word "suggestion" a detractive meaning. This is again a matter of convention; but what is still unquestionable is that the psychic state of the man who accepts without submitting it to careful examination a reasonable or acceptable idea submitted to him, cannot be of the same mentality as he who can be made to take "hawks for handsaws." If we admit that suggestion is in play in the first instance, it is necessary to admit at least that in the second case there is hypersuggestion, and the prefix of the word renders its sense detractive. [Trans.]

*Alienist and Neurologist, *loc. cit.* Trans.

causing to disappear. It should be added that experiments of this kind must be carried out on a large number of individuals, for in this regard the field of action of the will presents numerous individual variations. Therefore, one must be careful not to exclude this or that phenomena from the domain of suggestion because it has not been found immediately possible to induce it in some one under specified conditions; it is only after many repeated investigations that we are authorized to lay down laws, and still always with the restriction that new observations may lead to a revision of ideas thus acquired.

I shall not give a detailed description of disturbances which are tributary to suggestion, for that would lead me too far; I shall content myself with mentioning at most the principal ones: convulsive attacks, somnambulism, delirium, paralysis; divers contractures varied in their locations and intensity; tremors; choreiform movements, sometimes irregular, usually rhythmical; disturbances of phonation and respiration; disturbances of sensibility shown in anesthesia or hyperesthesia; sensorial anomalies; disturbances of the bladder. On the other hand, as I have already had occasion to say, suggestion cannot exaggerate or abolish tendon reflexes or cause disturbance of the pupillary reflexes, or the cutaneous reflexes; at most, suggestion can only render examination of these phenomena difficult or place obstacles in the way which might mislead a novice, but which an experienced neurologist would overcome; suggestion cannot induce vasomotor, secretory, or trophic disorders, and it cannot alone induce hemorrhage, anuria, albuminuria, fever. Upon these points in the recent discussion at the Neurological Society there was, so to speak, no difference of opinion, a fact which demonstrates most clearly the reversal of opinion that has taken place in those who seemed most attached to the traditional conception of hysteria.

An important question which is a complement of that which we have just examined should now be put. The symptomatic aspect of the phenomena which suggestion brings into being—is this appearance specific or may it not belong also to disturbances allied either to an organic affection or to some functional disease having a mechanism which differs from that of suggestion? At the present time it is impossible to answer this question definitely. For example, I have been able in a given case to reproduce by imitation the movements of the chorea of Sydenham so closely that I could not have distinguished the copy from the original; but my inability to make this distinction was perhaps due to the fact that our clinical investigations have not yet been carried far enough, and it may be hoped that one day we shall be able to distinguish infallibly by their symptomatic *facies* alone the manifestations of suggestion from disturbances which depend upon other affections. Still, we must remember that even to-day we have in our possession numerous signs which allow us, at least in many cases, to be almost certain. Of such signs some are of a positive kind. Thus there

is scarcely any risk of making a mistake when we affirm that a nervous attack with grand convulsive movements and *arc de cercle*, or a rhythmical chorea, is a phenomenon due either to suggestion or to simulation; for as far as our knowledge goes there is no other cause capable of inducing similar disturbances.* The other signs are of a negative kind. For example, I say that a paralysis is very probably the result of a suggestion when I find none of the symptoms which, save exceptionally, accompany more or less frequently and in greater or lesser number paralyzes of another origin. I add in parenthesis that the diagnosis of accidents (symptoms) of a suggestive nature is based upon negative signs much more frequently than upon positive signs.

The symptomatology of the phenomena with which we are occupied thus furnishes us with indications that are extremely valuable in diagnosis; but it is especially their evolution which gives them a distinctive mark—a certain *cachet* that is not always equally apparent but which an attentive observer and experimenter should usually discover and which will dissipate definitely all doubt. Let us suppose that we have to do with a complete brachial monoplegia. If we succeed in curing it, then in reinducing it and causing it to disappear alternately at will, we have caused it to undergo a kind of evolution which is manifestly characteristic.

It is true that we rarely have occasion to submit a proof so demonstrative, but the demonstration without being so convincing may nevertheless be sufficiently exact. Here is an experiment that I have employed usually with success in cases of brachial paralysis of a suggested kind: I raise the paralyzed arm and then remove the support; I repeat this manœuvre many times, and at the same time with questions and commands of various kinds I try to distract the patients attention from the principal object of my own attention. I note usually that intermittently, for a moment or more, the arm deprived of support instead of falling like an inert body, as happens infallibly in the case of organic paralysis, remains suspended in space, just as the arm of a normal person is maintained when he makes an effort to hold it in a similar attitude. The experiment revealing this is absolutely conclusive, and it seems to me easy of interpretation: a paralysis of suggested origin which, as I have already remarked, is a kind of unconscious or subconscious simulation, in order to exist, requires that the attention of the patient be concentrated on it; if the attention be deflected for any reason, the paralysis disappears. In reality my experiment is a psychotherapeutic procedure which induces a momentary cure of the paralysis, giving to its evolution a particular mark which permits me to affirm that my will has already in a certain measure become master of the disorder. But it is, as I have said, precisely this which gives to the phenomena with which we are concerned their character and which it is possible in the majority of cases of this kind to discover, if we be not satisfied with a superficial examination and we make our investigations with a little sagacity.

A special denomination is required for this group of phenomena, as one is for anything which is distinguished from other things, even though it be so by but a single attribute. I have proposed the term pithiatism from *πειτω*, persuasion, and *ιατος*, curable, and to designate by the adjective *pithiatic* the disturbances which make up this group. To be sure, it is not always, properly speaking, by reasoning, as the word persuasion might lead one to believe, that we cure these troubles; and the word pithiatism does not, moreover, evoke by its etymology the thought that these disorders are of suggestive origin; but it is impossible to find a term which translates with the shades of meaning desirable the two principal ideas which belong to the object of our study. The word I have selected at least expresses the feature of all others which is the most interesting to the physician,—the idea that the accident (symptom) in question may, under the influence of persuasion alone, disappear completely. Furthermore, as I have already said, the choice of a word is only a matter of convention, and if anyone were to propose a term more comprehensive I should gladly accept it; but that could in no way change the fundamental nature of the phenomena themselves.

(b) A very important rôle has been attributed to emotion in hysteria, and it has been generally admitted that the phenomena in question, to which I give the name pithiatic, develop and disappear usually under the influence of moral shock; thus we have been led to confound two groups of manifestations which should be distinguished from each other.

In the first place, it may be asked whether emotion really has the effect upon the genesis of pithiatic disturbances, the influence, with which it is credited. If it has, the frequency and the form of these disturbances should be, contrary to what has been observed, almost parallel in the ordinary conditions of life; for humanity is always agitated by the same passions, and human emotivity has hardly changed. In my opinion, emotion, admitting that it intervenes, plays a rôle infinitely less important than contagion and imitation, the influence of which, in particular on convulsive attacks, is shown most clearly. But it will be said if imitation may be incriminated in cases confined in a hospital ward, it is more difficult to invoke it when we have to do with cases living in the family, who are not in contact with other patients, and whose first attack, immediately consecutive to an emotion, presents the characteristics of a spontaneous phenomenon. In answer to this I will say that a careful inquiry in such cases shows often that the spontaneity is but apparent; that there was really a reproduction of an attack observed in another; and that sometimes, too, what is called an hysterical crisis (attack) is only an association of cries, of gesticulation, of voluntary conscious contortions having as origin in its author, not an emotion but the desire to excite those around them. It should also be remarked that a mythomaniac who desires to counterfeit convulsions without ever having seen an hysterical attack might be spontaneously

led to execute movements analogous to those by which the legitimate attack is characterized. Too, it does not seem to me to be demonstrated that cures of pithiatic accidents, even when they occur under circumstances calculated to cause emotion, are due directly to the emotion which the patients experience. Here, for example, is a young girl presenting hysterical paraplegia, who after having been dipped in a miraculous pool hops out completely cured. I am quite willing to admit that she was intensely moved by the pious ceremony in which she played a part, but it is also incontestable that having been told of the cures which had already been obtained in the same way, she was therefore the object of persuasion or suggestive influence, to which it is natural to refer the return to a normal state. Let us take another example, that of a woman afflicted with paralysis or with hemiplegia rebellious to all attempts at psychotherapy, who, seeing that the house is on fire, jumps out of bed, runs out, and thus is restored suddenly to health. In this case, emotion seems indeed to be the cause of the cure, but on reflection this conclusion becomes a matter for discussion. It must not be forgotten that it is usual to say to such patients that they will one day get well suddenly under the influence of joy, terror, or some other moral shock; and it may be presumed that such a prediction coming to mind at the moment of the conflagration exercised a psychotherapeutic influence. There is still another interpretation that may be proposed. It may be maintained that a patient afflicted with a pithiatic disturbance plays, after a fashion, a part, either unconsciously or subconsciously to be sure, for otherwise the patient would be but a vulgar simulator. The patient needs to give to his condition his entire attention, and doubtless it is for this reason that when by some artifice we divert his mind from the idea which obsesses him, we sometimes succeed, as I have previously remarked, in causing the trouble to disappear temporarily. Is it not logical to think that the imminence of some great danger is especially apt to induce in such a case a change in the course of ideas? When the patient ceases to think of his paralysis, quite naturally he recovers the use of his member; when the idea of impotence reappears in his brain, he sees at the same time that he was completely over it for a few moments; and there is in this all that is necessary to permit him to persuade himself that his condition is curable.

Thus it does not seem to me to be proven that pithiatic accidents have very close relationship with emotion. But even admitting that they have, they should not be confounded with other phenomena of which emotion is incontestably the direct source, and to which, in order to avoid any confusion, I shall reserve the epithet *emotive*. In fact, there are certain characteristics which distinguish clearly these two kinds of manifestations from each other. While the will is master or capable of becoming master of pithiatic disturbances, capable of determining their form, of regulating in a way their intensity and their duration, the will cannot control emotive phenomena, among which may be men-

tioned tachycardia, vasomotor perturbations, erythema, intestinal and cutaneous secretions; here we have a line of demarcation that is perfectly clear. There is, however, one cause of error of interpretation, an error frequently made, which I must point out. Almost at will it is possible to induce in many persons acceleration of the cardiac pulsations, as well as vasomotor reactions, and if we do not analyze these facts with sufficient care we are led to conclude that they are the product of suggestion; but, this is only an illusion, at least if, in accordance with the conventional signification I have proposed for the word, suggestion implies the idea that the will is master of the disturbances it has provoked; it is only by means of an emotion created by suggestion that these manifestations are developed, and having once appeared, they are no longer subject to the influence of the will, which can neither determine the form, the intensity, nor the duration of them. Experimentally, in suggestionable subjects, I can produce, for example, at desire, a limited paralysis of the arm or one implicating the entire body, slight or intense, lasting a few seconds or several hours, but I am in nowise able to regulate at will an emotive tachycardia, to accelerate or retard its end within any limits that I have determined upon beforehand. There are evidently capital differences between the pithiatic and the emotive phenomena, which, in parenthesis, exist in the normal state and can be considered pathological only when they have assumed excessive intensity.

(c) There is found in medical literature a third group of facts which consist of a generalized exaggeration, either of the tendon reflexes, or of the vasomotor reflexes of the skin (dermographia), and which have been attributed to hysteria. We shall presently see what is to be thought of this opinion, but it may be said here that this group is distinguished from the two preceding groups still more clearly than the first two are distinguished from each other. For emotive and pithiatic phenomena appear and are developed under an influence that is purely psychic, while a physical excitation of the tendons and integument is necessary for the production of reflex phenomena, and moreover, as I have already remarked, they are not disturbances, like those of a pithiatic kind, amenable to suggestion and persuasion.

We are then forced to recognize that there are three groups of phenomena which cannot be classed one with another, and that we must be careful not to confound them.

These three groups, while each one has certain characteristics which distinguish it, may nevertheless be related in certain ways, and if so, it would be legitimate, even necessary, to have, besides the appellations which are applicable to each one in particular, a term common to them all which would designate this nosologic association. But does this relationship exist, and if it does, what is it? It was thought that it had been found in the fact, which is not rare, that the phenomena of the second group (emotive) or those of the third (reflex) were observed

to be associated with those of the first (pithiatic), in particular with sensitivo-sensorial anesthesia; but such observations are far from demonstrative to those who are aware how numerous suggestionable people are, and with what facility suggestibility is brought into play, especially in hospital wards, and how common the association of pithiatic disturbances with the most various affections is, whether these be functional, organic, dyscrasic, toxic, or infectious. There are no statistics which justify us in admitting that phenomena of the second group (emotive) and third group (reflex) predispose in any special way to pithiatic accidents. If now we examine systematically the phenomena of the second and third groups in persons presenting pithiatic disturbances, and the same phenomena in an equal number of individuals that have never presented pithiatic accidents, it is found that the phenomena of the second and third groups are not more numerous in the one than in the other, and we are led to conclude that pithiatism is not a cause of these phenomena. It goes almost without saying that such comparative investigations must be made on persons who, aside from the presence or absence of pithiatic disturbances, are in either instance as similar as possible from the point of view of age and health. These two kinds of observations are completed one by the other, and show that there is no relation between pithiatic phenomena and those of the two other groups.*

We have just seen that after having separated from hysteria, as hysteria exists in the idea of it that has come down to us, all that has been incorporated with it unduly as the result of error in diagnosis committed through lack of a satisfactory semiology and because of imperfect knowledge of simulation and mythomania, there still remain three groups of phenomena which I have named pithiatic, emotive, and reflex, which are distinguished from one another by differential characteristics, and which have no uniting relation. Therefore it is impossible to give them a common name; logic does not allow it.

This fact established, we should ask ourselves whether we shall continue to employ the word "hysteria" or not. Here it is no longer a question of logic but simply a question of convention. In my opinion it would be preferable to suppress a word calculated to cause misunderstanding, but it is permissible nevertheless to retain the word on condition that its sense be clearly defined and that it be understood that the term is applicable only to the first, or the second, or the third group of phenomena which we have just passed in review. It seems to me that there can be no hesitation concerning the group to which it should be applied; if we wish to use the word hysteria, it is natural to reserve

*The author, doubtless familiar with Hoover's sign, has not seen fit to mention it for lack of personal test of its value. This sign seems destined to prove valuable as a positive sign of psychic paralysis. *Vide* "Complemental Opposition," Dr. C. F. Hoover, *Journ. A. M. A.*, August 29, 1908; "A New Sign for Detection of Malingering," Dr. P. Zenner, *Journ. A. M. A.*, October 17, 1908. [Trans.]

it for pithiatic phenomena which comprehend all the disturbances that have always been considered the most characteristic, the most important, of hysteria, and to which this neurosis owes especially the curiosity, the interest, I might say even the passion, its study excites. For my part, I shall employ these two terms, hysteria and pithiatism, synonymously, leaving to time the decision of the question, a question, however, of secondary importance, whether both should be preserved or one only.

Hysteria thus defined is a neuropathic state definitely delimited and distinguished clearly from all other neuroses. It is possible theoretically to deduce from the definition I have given that hysterical or pithiatic phenomena must, as a characteristic, depend essentially for their apparition, their duration, their form, and their disappearance, upon the psychic surroundings in which suggestionable subjects live, and whose morbid predisposition may be brought into play by this or that spectacle, this or that remark. There are abundant facts to confirm this idea. Here is a common example of this: an hysterical person subject to attacks (crises) is admitted to a hospital ward; a few days after, one of her companions, who until that time had never had such symptoms, is taken with an hysterical attack identical in form with those which she has seen; then a third, a fourth patient are attacked in the same way, and thus there is produced sometimes a veritable epidemic. This is observed especially if the chief of the service or his pupils seem to be interested in these phenomena and if they have given importance to them in the eyes of other patients by their attitude and the words they exchange. In the case of hysterical persons cared for at home, the duration, sometimes very long, of the disturbances which they present is due in many cases to the unfortunate impression which the excessive solicitude with which they are surrounded and the anxiety which their relatives manifest, make upon their minds. Moreover, it is for these reasons that change of surrounding, isolation, persuasion, psychotherapy, when applied to such patients, act marvelously. The influence of surroundings and circumstances on hysterical manifestations explains also how they change in appearance, how they undergo in time transformation, and this peculiarity is worthy of attention. If, as I have just remarked, we still see epidemics of hysteria in wards, nevertheless we do not see to-day manifestations like the epidemics of dancing seen in the Middle Ages, which attacked whole country-sides and which religious fanaticism brought about. At the present time such manifestations are represented only by the "Douchoboris" (fighters for the soul, Russians belonging to a religious sect, emigrated to Canada), who, toward the end of 1902, to about the number of 2000, left their homes and went about marching naked in the snow, searching for the Kingdom of God. But without going so far afield for examples, in order to convince oneself of the exactness of the fact that I have tried to bring out, it is enough to compare hysteria as it is actually seen in the hospitals of Paris with the

hysteria of twenty or twenty-five years ago. The grand accidents—the paralyzes and contractures which lasted for years and which were formerly very common—have become extremely rare. We no longer see the grand attack with its four famous periods; the grand hypnotic states characterized by lethargy, catalepsy, and somnambulism. Students and young physicians who read to-day in works of that time the descriptions of those disorders, gain the impression that they are studying paleopathology.

It should be added that hysterical or pithiatic phenomena, which are the work of suggestion or of autosuggestion, are also distinguished by the fact that they are in large part subordinate to the will, to the fancy, more or less conscious, of the patients, who sometimes succeed in curing themselves, thanks to their own energy. I am acquainted with persons that have enjoyed perfect health for a long time, who, after having been in hospital for several years and presented the most intense and varied hysterical accidents, were one day taken with the desire to return to society and live a normal existence, and who very rapidly succeeded in completely overcoming their troubles by an effort of the will, as it were, by autopersuasion.

If now we compare, from the various points of view which I have just considered, other neuroses and hysteria, we cannot fail to be struck by the differences which distinguish these conditions. Take, for example, the *maladie du doute* (insanity of doubt); and if I choose this example it is only because recently a neurologist of authority has maintained to my great stupefaction that there were "important analogies between psychasthenia and hysteria.* That certain phobias may be the result of suggestion, that they may disappear under the influence of persuasion, and are therefore pithiatic phenomena, is a fact I do not contest; but I think I may affirm with truth that a person afflicted with insanity of doubt in a well characterized form has never been able to cure himself by autopersuasion. This is the more remarkable because many of these patients are capable of exercising in grave and difficult situations in life intelligence and energy; because they are the first to qualify their obsessions as absurd; and because they have the most intense desire to get well. But observation shows that their will has but very little influence on their trouble; in contrast with the hysterical, who are, so to speak, actors in their morbid manifestations, the true doubters conduct themselves more like simple spectators capable only of contemplating

*I have been in the habit of calling pithiatic disturbances primitive hysterical accidents, and I have said that it would be right to call also those disturbances hysterical which, while they do not present the characteristics of primitive accidents, are united very closely to primitive accidents but to which they are subordinate; that they might be considered to be secondary hysterical accidents. But it was only provisionally that I made this special distinction of these phenomena, and the reality of my distinction has not yet been demonstrated.

(1) *Vide* *Révue Neurologique*, 1908, p. 501. The insanity of doubt is comprised in what Mr. Janet calls psychasthenia.

and analyzing, sometimes with great refinement, their phobias and obsessions.

The psychic influence of the environment of these doubters, these phobiacs, these psychasthenics, on the intensity and modality of their disorder, without being *nul*, is really very feeble. Their disorder is subject to alternate improvement and aggravation, and it is sometimes manifested in the form of crises of phobias and obsessions, which may last several months, and between which there is a period of relative calm, a circumstance which, if such a period of calm coincide with a change of surroundings, may lead to errors of interpretation. But in reality, when we consider these facts as a whole, we arrive at the conviction—this at least is my opinion—that circumstances of this kind exercise but a very limited influence on this affection. What proves this, I believe, unquestionably and helps to establish a distinct line of demarcation between the two nervous conditions we are now comparing, is that, contrary to what we observe in hysteria, the insanity of doubt with its various modalities presents itself and has always presented itself with the same aspect, or nearly so, in all countries where it has been studied, and in all social conditions; the descriptions of it given by observers of the generation preceding our own are perfectly applicable to the patients we see to-day. We may say, in order not to prejudice the future, that up to the present time this disease has not changed, and such immutability in time contrasts with the extreme mutability of the disturbances which constitute hysteria, pithiatism.

I do not pretend that human beings are now less suggestionable than formerly, but I do say that knowing the circumstances calculated to bring into play suggestionability, we are able to influence its manifestations, to prevent their development; and, if they have once appeared, to cause them to disappear by reason, persuasion, or the confidence inspired in the patient by the therapeutic means employed; and he who decries such means may still induce the same result. In this there is a contrast with what is observed in other neuroses and other mental diseases.

Does it not result clearly from all this discussion that pithiatic phenomena must necessarily be placed in a special class and separated from all other phenomena with which they have been confounded?

It is easy to understand that pithiatic phenomena may exist in a pure state or be associated with other affections which they are capable of masking or by which they may be masked. Lack of appreciation of these associations has led to erroneous interpretations of many facts that are easy of explanation; herein lies the origin of that false idea, so widespread formerly and still admitted by some, that affections independent of hysteria may be cured by suggestion or persuasion. But I defy anyone to cite me a single case of such disorders that can be made thus to disappear. Sometimes, it is true, in persons afflicted with neurasthenia or insanity of doubt or some other organic disease, psychotherapy cures certain disturbances occupying a more or less important place in the

symptomatic picture. But is it reasonable to maintain, with such facts as a foundation, that the nosologic states in question are made up of two orders of phenomena, some curable, others incurable, by persuasion or suggestion? Most assuredly not. It is much more logical to say that in such cases we have to do with associations of hysteria with other affections, and that the troubles cured by psychotherapy belong to hysteria. It is entirely evident that pure or associated pithiatic phenomena are all of the same nature, and I can see no reason to separate the one class from the other.

And now if we consider that pithiatic phenomena may imitate more or less closely functional disturbances in the most varied diseases; that they may be associated, not only with nervous affections, but with all internal maladies, visceral, thoracic and abdominal; that they are susceptible of rapid, even instantaneous cure, or may last indefinitely, depending upon whether their nature is recognized or not, and whether the physician is a good psychotherapist or not, it is evident that no physician should neglect the study of them. This seems to me even more necessary because a physician in contact with suggestionable persons inevitably exercises an influence on them by his words or by his silence, by his zeal or his indifference, which, if it be not good, is certain to be bad; his presence will be either injurious or useful, for it can scarcely be indifferent.

The ideas that I have just exposed appear to me to be worthy of meditation; not only because they are true do they merit attention, like every scientific truth, but also because they lead to several important practical consequences which I shall indicate.

1. Knowing the action which he exercises on suggestionable subjects and the rôle which he must play involuntarily, if he is not on his guard, in the genesis of pithiatic phenomena, the physician, while observing his patients, will attend to himself. He should watch his words carefully, remembering always that a badly framed question or an inopportune reflection may be the cause of a suggestion. There lies a danger which must not be lost from view, and which can be avoided if the physician in his questions and examination is guided by rules which I have given in a general way elsewhere.*

2. Knowing that a suggestionable subject is prone to be influenced by his surroundings, the physician will not be contented with his personal influence exercised in psychotherapeutic procedures on patients afflicted with pithiatic disturbances, but he will seek to create by all means in his power a psychic environment salutary for such patients.

3. Convinced that true pithiatic disturbances should yield quickly to psychotherapy when skillfully employed, when, in a case of this kind, his therapeutic efforts have failed, the physician will be led to conclude that success was prevented by some contratherapeutic influence, and he

*Alienist and Neurologist, *loc. cit.*

will try to discover it and remove it, and thus realize the conditions which may assure a cure.

4. Knowing the limits of pithiatism, he will be able to distinguish disturbances which do not belong to this domain, and will not try to cure them by psychotherapy. Not making promises which he is unable to fulfill, he will avoid bringing discredit upon himself. And besides, and this is even more important, having no illusions about the results to be expected from such treatment, he will be less likely to neglect therapeutic measures which non-pithiatic affections demand.

5. Possessed of more exact and more precise notions than formerly about pithiatism and about simulation, he will be better prepared as an expert to give an opinion of value in legal suits where damages are demanded.

A. On the one hand, he will not commit the error of attributing to simulation or hysteria, conditions manifesting characteristics which the will is incapable of bringing about and which are not pithiatic. He will be less likely than in the past to underestimate the reality or importance of prejudice caused by accidents and to deprive those who have been their victims of legitimate damages.

B. On the other hand, he will be better qualified than formerly to prevent the abuses which the law governing accidents to employees has engendered and of which the ancient conception of hysteria is one of the principal causes. (a) Knowing that all the pithiatic phenomena can be exactly reproduced by simulation, he must be on his guard when he has to do with a subject presenting disturbances having characteristics which belong to this class of phenomena. He will subject the person to very attentive observation which will sometimes permit him to uncover fraud. But even in case he does not succeed in uncovering fraud, he will never guarantee the sincerity of the individual. Moreover, when he has found no fact which authorizes him to suspect the good faith of the interested party, he should declare that the prejudice caused is minimal, for, I repeat, hysterical disturbances yield to psychotherapy when employed under favorable circumstances; and as for hysterical post-traumatic manifestations in particular, experience shows that they disappear, so to speak, always after the termination of the suit for damages which has finally defined the complainant's situation, freed him from the preoccupation occasioned by the delay of judgment, and thus suppressed the principal obstacle to a cure.

(b) Firmly convinced of the truth of the idea that "hysterical vasomotor and trophic disorders" are only fictions, as a result of which so-called victims of accidents have unjustly profited to the detriment of others; that these pretended hysterical disorders are the work of deception, the expert will better know how to direct his investigations when he has to do with a subject who declares himself, after an accident, to be afflicted with either hemorrhages or phlyctenae or ulceration or gangrene or hemorrhages in the skin or edema of a limb. If it seems to

him impossible to establish a direct relation between the condition observed and the accident undergone; if the disorder does not appear to depend upon some clearly defined affection, which, while having preceded the accident, might have been influenced by it, he should think of the possibility of deception, and employ every possible means to verify his hypothesis.

I think I have the right to conclude from this study that the ancient conception of hysteria founded upon observations, some of which are insufficient and others erroneous, does not stand criticism; that the *dismemberment of traditional hysteria* is an inevitable consequence of a series of facts formerly unknown but solidly established to-day; that, as the result of this disaggregation, there is liberated an autonomous group of phenomena occupying a very important place in pathology for which we may reserve the term hysteria, but which is more expressively named by the word Pithiatism.

ANATOMY AND SURGERY OF THE HARD PALATE OF THE
INFANT.*

By VILRAY PAPIN BLAIR, M. D.

Clinical Professor of Surgery in the Medical Department, and Professor
of Oral Surgery in the Dental Department of
Washington University, St. Louis.

Any one doing any considerable amount of cleft palate surgery recognizes that in spite of a century's work the results are far too uncertain and, in a percentage of cases, too unsatisfactory to permit of contentment. These operations should be attempts to restore the normal anatomical condition, for it is almost axiomatic that the more closely we imitate the natural the more perfect will be the functional results; and only functional results should be considered.

Much study has been devoted to the etiology of these clefts, yet in the latest anatomical text books, even in different chapters in the same book, widely different views are expressed on points that are all but settled. Too little space is given to the anatomical variations in individual cases and the changes that occur during later development. While anatomically these may be trivial, surgically some of them are of vital importance. In early infancy certain important anatomical details vary considerably, but it is in infancy that the various structures involved more closely conform on the whole to the normal, their position and connections being abnormal. Later development lessens the individuality of these variations but increases the general deviation of the structures themselves. Further, as far as I know, the bearing of certain fundamental anatomical points has never been presented in this connection.

Not with any idea that what I am about to present is original, but because those who have heretofore made the observations have failed to record them where I could have access, necessitating my working them out for myself, I shall illustrate certain anatomical points with their surgical bearing by frozen sections, diagrams, plaster casts made from cases in my hospital and private practice, and preface these with a mention of certain theories of the etiology of cleft palate and make the whole connected by a description of the operation that most appeals to me.

Clefts of the hard palate are median or nearly so in the posterior part; that is, the part which is composed of the palate and maxillary bones, but if the cleft extends forward of the incisive foramen, it will deviate to one or both sides following the line of junction of the maxillary and

*Presented at the Surgical Section of the St. Louis Medical Society.

Note.—Specimens illustrating normal anatomy were prepared by the author in the anatomical laboratory of the Medical Department of the Washington University.

premaxillary bones. I say advisedly that clefts in the posterior part of the hard palate may be nearly median, for though the cleft is formed by lack of junction of the two palate processes, still as will be illustrated later, if the vomer join either palate process the cleft will be lateral of the median line. If the vomer join neither palate process then the cleft will be partially or wholly symmetrical. These points are illustrated in Figure I.

The first debatable point I wish to present for your consideration is the relation of the cleft to the lateral incisor. As you know the cleft may be in front of or behind the lateral incisor; this tooth may be missing, or it may be represented by two small teeth that bound either side of the cleft. This has caused much study and speculation. It is most probable that Sir Wm. Fergusson was nearer the truth than some of his later critics when he explained the lack of the lateral incisor by the supposition that it was lost in the cleft. Albrecht undertook to account for these variations by the hypothesis that each half of the intermaxillary bone was originally derived from two pieces, each piece carrying the rudiment of one tooth, and that the cleft was situated between them. Albrecht's theory is illustrated in Figure II, but it is purely hypothetical and must presuppose that the teeth are originally formed in certain definite parts of the bone, which by the researches of Röse has been proved erroneous and it is probable that Kolliker's theory, that the alveolar part of the cleft follows the junction of the maxillary and intermaxillary bones, is correct, but neither is essential to explain the relation of the teeth to the cleft. The teeth are developed from infoldings of the mucous membrane covering the primitive jaws. Later these infoldings, uniting with some of the mesoblastic tissue of the future jaws form the dental follicle. This makes the exact relation of the teeth to the cleft rather accidental.

Mr. Edmond Owen cites Dr. Arthur Keith's specimens, some of which show the bud of the lateral incisor in front of and in others behind the cleft. Other rare specimens show the bud has been divided with a small lateral incisor standing on each side of the cleft.

Occasionally we will find the lateral incisor absent or blighted as shown in Fig. III with no cleft of the palate, but this may accompany hare lip or be the precursor of a cleft in the next generation.

As far as the formative forces of the body are concerned, a cleft palate is simply a failure of union of the parts, for as Sayer, I think, pointed out and has been later emphasized by Brophy, even at term little of the palate tissue is missing, though occasionally a whole portion such as the intermaxillary bones, may be entirely absent.

The width of the cleft at birth is due, not to lack of tissue, but to the yielding of unsupported bone to muscular force. This is expended in several directions through the agency of the tongue, the lower jaw, and the cleft lip. The tongue and lower jaw pushing upward spread the two halves of the upper jaw apart, as shown in Figure IV. In the right-hand picture is shown the normal relation of the jaws in a coronal section of a term

DESCRIPTION OF ILLUSTRATIONS.

Fig. I.—Casts showing the three commoner forms of complete clefts. The one to the left is the most common of all and is a single cleft. The middle is a complete double cleft showing the nasal septum with the intermaxillary bone attached. The intermaxillary bone is marked O. The picture to the right is of a cleft that is double behind but single in front; that is, the intermaxillary bone has joined the right maxilla though the septum has been joined by neither maxilla. I do not remember to have ever seen a case where there was a double cleft in front with a single or no cleft behind; but cases of single alveolar clefts with no cleft in the palate are comparatively very common. On these casts the clefts have been penciled to make them more distinct.

Fig. II.—Taken from Gray's Anatomy, illustrating Albrecht's theory.

Fig. III.—Showing a case in which an under-developed lateral incisor accompanied a cleft of the lip that extended into the nostril.

Fig. IV.—A study of the relation of the lower jaw and tongue to a normal, and to a cleft palate. The normal palate is illustrated by a coronal frozen section, the cleft by a coronal section of a plaster reproduction of a single cleft palate. The arrows point to the alveoli in both sections. Notice that in the normal palate the lower jaw is slightly wider than the upper and that in the cleft palate the lower jaw has risen up and is wedged in between the two halves of the maxillae. In the normal palate section the mouth is partially open.

Fig. V.—Complete double cleft in which the intermaxillary bone has traveled forward until it occupies the normal position of the columella.

Fig. VI.—Showing the common condition in which a wide single cleft is prevented from further spreading by the ala of the nostril with the columella being stretched tightly between the two halves of the maxillae.

Fig. VII.—A case of double hare-lip with a single bone cleft limited to the left alveolus, showing how much the intermaxillary fragment may be pushed forward under these conditions.

Fig. VIII.—Cast of a case where a wide single cleft had been narrowed by the early repair of the lip. Further approximation was prevented by the horizontal part of the septum filling the gap. This part of the septum is marked with cross lines. See also figures IX and X.

Fig. IX.—Showing a diagrammatic reconstruction of a right-sided single cleft based upon the study of this condition in the living infant; and a coronal section through a cast of a right-sided single cleft palate. Notice the vertical position especially of the right free half of the palate which has been pushed up into the nose as far as the inferior turbinate will permit, and that the inferior and middle turbinates have in turn been pushed upward. Notice that the increase in width of the nasal cavity is nearly equal on both sides.

Fig. X.—Showing horizontal part of septum partially filling the cleft. It is here outlined in dotted lines to make it distinct on the picture. The two x x indicate the separated parts of the alveoli.

Fig. XI.—Showing two cleft palates after the operation. On the one to the left there was no alveolar wire used and on the other it was used. Note the better adjustment of the alveoli in the latter case, but this alveolar adjustment must not be made the prime consideration.

Fig. XII.—A case of complete single cleft of the palate and lip before and after the approximation of maxillary bones. Notice the narrowing of the lip cleft after this operation, which makes the repair of the lip not only easy, but very much more effective from a cosmetic standpoint.

Fig. XIII.—Coronal section through the incisor teeth of term infant showing that in freeing the anterior part of the alveoli, the nasal cavity, but not the orbit, will be invaded.

Fig. XIV.—Frozen section through the anterior molars of a term infant. This section is in front of the antrum and the bony floor between the orbit and the tooth-sack has some thickness and contains the canal for the infraorbital nerve. Floor of orbit and tooth-sack are outlined in ink on the left side.

Fig. XV.—Frozen section through the head of a term infant at the level of the second molar tooth. The floor of the orbit has less thickness here than over the first molar. The antrum (A) is shown opening into the middle meatus of the nose. On the left side of the picture some of the details have been intensified by outlining with ink. On the right side nothing has been touched.

Fig. XVI.—Casts of a case before and after the operation of approximating one maxilla with the maxilla and intermaxillary part on the other side of the cleft. The picture to the left presents the condition before operation, that to the right, after operation. The dotted line across part of the first picture shows the width of the palate after operation and demonstrates that by the operation the palate was narrowed by nearly one-third of its greatest width. The apparent discrepancy in the size of the maxillary bones in the two pictures is due to the fact that in the position in which they are seen before operation a greater bulk of the jaws is turned broad side to the camera than appears after operation. The exact cross measurements on the casts are 36 mm. before operation as against 27 mm. after operation.

Fig. XVII.—Showing the extensive adjustment that is possible with misplaced alveoli. The x x in both pictures show the positions of the free ends of the alveoli. Notice the symmetrical, deep, round palate that has resulted from the operation.

Fig. XVIII.—A study of the growth of the palate from infant to adolescence. The cross on both palates is the same size, 18 mm. in length and 20 mm. in width, which are the full dimensions of the infantile palate. The measurements on the infantile palate were taken from the anterior palatine canal to the posterior nasal spine, and between the posterior palatine canals. When the cross of the same dimensions is laid on the adult palate, taking the anterior palatine canal as the fixed point, it will be seen that the cross piece is at the level of the posterior borders of the second bicuspids, which is the original position of the posterior palatine canals, and that while there is a slight lateral and forward growth of the palate, the great part has been backward; which was to be expected because it corresponds to the direction of growth of the alveoli of the upper and lower jaws.

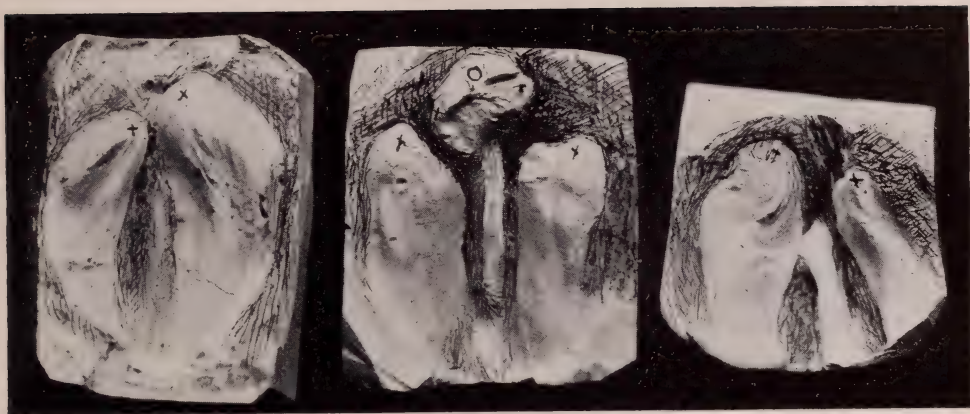


FIG. I.

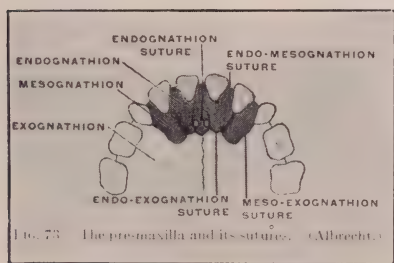


FIG. II.



FIG. III.



FIG. IV.



FIG. V.



FIG. VI.



FIG. VII.



FIG. VIII.

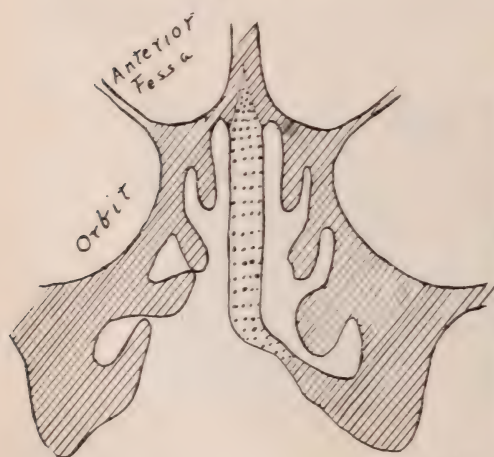


FIG. IX.

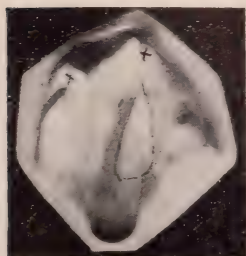


FIG. X.

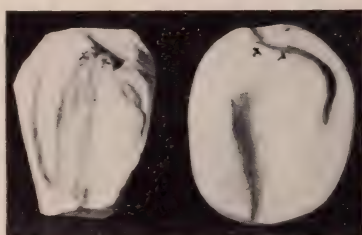


FIG. XI.



FIG. XII.

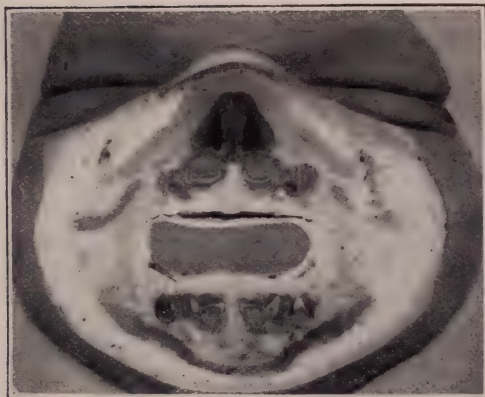


FIG. XIII.



FIG. XIV.

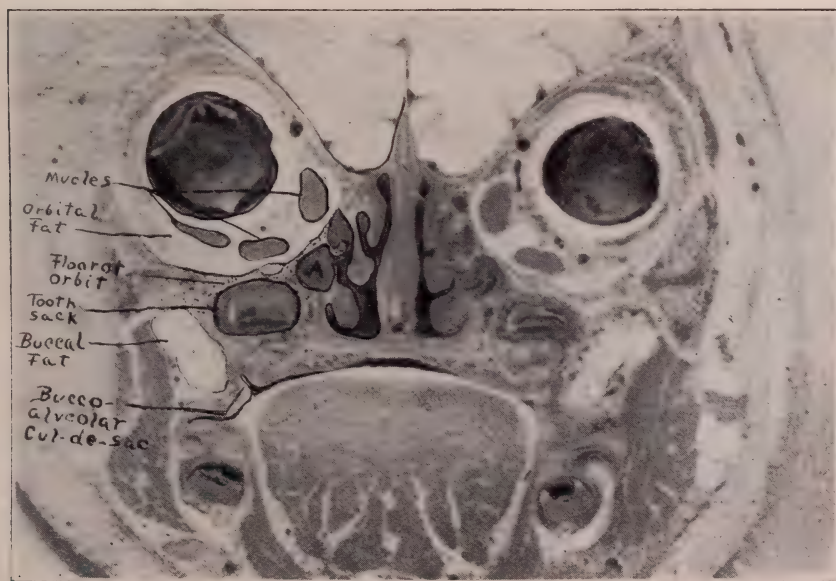


FIG. XV.

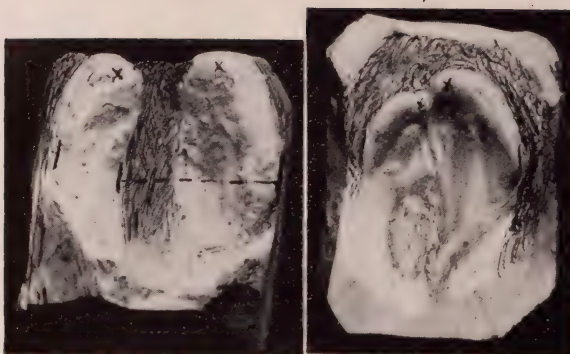


FIG. XVI.

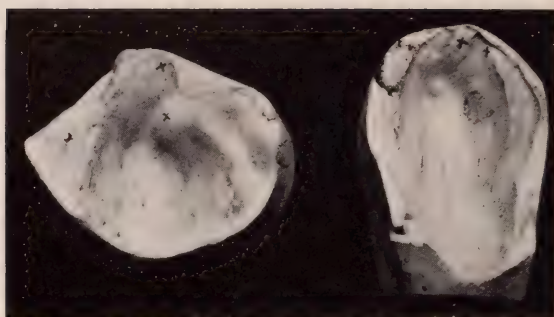


FIG. XVII.



FIG. XVIII.

infant. The left-hand picture shows a coronal section of a cast of a cleft palate and lower jaw. Notice how the tongue and lower jaw have moved upward and spread apart the two halves of the upper. This illustration is original but the explanation is not. A free intermaxillary bone is pushed forward, but whether by the tongue alone, or with the help of other agencies I am not certain. It is not due to, or even accompanied by an increase in the length of the nasal septum, for the nose is not more prominent in these cases, as shown in Figure V. It moves forward at the expense of the columella and therefore the retraction of the tip of the nose after its replacement by shortening the septum. In complete clefts of the lip and palate the ala of the nose in front, and probably the lower jaw and muscles of mastication behind, are the factors that limit the spreading of the cleft, as shown in Figure VI. If the lip is intact the cleft will be narrow anteriorly, or will become so if the lip is repaired while the bones are still soft. If the cleft is situated behind an intact alveolus, the spreading will be still more limited, but in a cleft limited to one or both sides of the alveolus, with cleft lip, there will be found displacement of the intermaxillary bone, as shown in Fig. VII.

The first attempt to lessen the width of the cleft before attempting to close it by flap operation seems to have been the early repair of the lip and this is still a popular procedure with many if not most surgeons. Fig. VIII. Then came Fergusson's suggestion of the submucous loosening of the palate process and also the practice of crushing the smaller half of the maxilla toward the median line; but these latter operations were ordinarily not done on infants.

To my mind the most effectual operation directed to this end is that devised by Dr. Truman Brophy, which brings the halves of the bone into place by bending, or by bending and cutting, and holding them in their new position by wires until union has occurred between the halves.

There is a special anatomical feature in broad unilateral clefts that must be noted here. In these cases the displacement of the two halves of the maxillae is about equal. The nasal septum extends down from the sphenoid, ethmoid and nasal bones in the median line to the level of the palate. It then turns at about a right angle and passes more or less horizontally to join the process to which it is attached, so that while the space between the palate processes is possibly 1 cm. the cleft itself will be but half that width, the rest of the space being filled by red mucous membrane derived from the nasal septum. The septum underlying this is, however, bone and not cartilage. This is shown in Fig. IX, which also shows how the width of the cleft depends upon the spreading and bending of the maxillary processes upon the upward bending of the palate process.

Figure X shows the horizontal part of the septum from below.

In closing the cleft I have never entirely sacrificed this horizontal part of the septum, but have incorporated at least its muco-periosteum into the new palate. In doing this operation the edges of the hard palate are

freshened to the bone. Then carrying threads are passed so as to draw two pieces of No. 20 silver wire entirely through both halves of the maxillae and through the nasal septum, above the level of the hard palate from one bucco-alveolar cul-de-sac to the other. These are then threaded into two small lead plates, one of which rests snugly against the outside of the maxilla in the cul-de-sac on each side. The bones are approximated with a clamp and also by taking up the slack in the wires by twisting the anterior to the posterior across the lead plate on each side. When necessary a knife is thrust into the maxillary bones, especially at their malar processes, in such a way that but a small hole is made in the mucous membrane. My experience has convinced me that it is not wise to exert too much effort to do the operation without cutting the bone. When much force is required the clamps and plates by themselves will do more damage than when the outer wall of the orbit is weakened and the resultant reconstruction will be less satisfactory.

I have found in most cases a supplementary wire approximating the alveoli in front to be advantageous. Notice in Figure XI the roundness of the alveolar arch on the right, in which this wire was used, in comparison with the other case where it was not used. The approximation of the maxillary bones not only facilitates the closure of the soft palate, but also of the lip, as shown in Figure XII, which shows this aspect before and after the maxillary approximation.

In young infants the wires that traverse the maxillary bones, pass either through the lower part of the orbit or through the sacks of the uncut molar teeth, for as shown in the accompanying reproduction of coronal sections, through the head of a term infant, Figures XIII, XIV and XV, the floor of the orbit is the roof of the tooth sack, is of the thickness of blotting paper and it is of hard bone. In Figure XV the newly forming antrum can be seen budding from the middle meatus completely to the median side of the tooth sack. Puncturing the tooth sacks with the needle and wire does not directly cause injury of the permanent teeth, for the germs of these at this time are very minute and lie to the median side of and are protected by the large developing deciduous molars. It does, however, cause an early shedding of the deciduous teeth which in turn causes improper development of the alveoli and malpositions of the permanent teeth. This is one of the most serious objections that has been urged against this operation.

I prefer to pass the wires so that they enter the orbit just above its floor and use for this purpose needles that are three-fourths of a circle. This floor is very strong and gives excellent purchase. It does away with the objection already mentioned and also with the danger of so damaging the alveolus and palate as to cause them to slough en masse. Such an accident with most deplorable results has come to my notice more than once.

The same holds true for the position of the cuts that weaken the bones and I have never seen anything more serious than a transient orbital

ecchymosis from the passage of the wires along the upper surface of the orbital floor while I cannot say the same for passing them below the floor.

Dr. Thomas Gilmer has done me the compliment of telling me that he believes that the method of putting the wires through the orbit is original. The wires are left in place about three weeks. The result of the operation in most cases should be an almost symmetrical palate with union for about two-thirds the distance back and a great narrowing of the posterior part. Fig. XVI. With some very wide clefts one must be satisfied with less classical immediate results which should not, however, preclude good final results. In some cases where the cleft is very wide and one of the maxillary fragments disproportionately small, success can be obtained by disregarding, at the first operation, the relation of the alveoli to each other, and later, at the time the lip is repaired, by cutting above their bases the alveoli can be perfectly united, as shown in Fig. XVII. See also Fig. XIII.

While as previously quoted, there is as a rule little of the palate tissue missing, still construction of the new palate is usually made difficult in wide clefts by two facts. In the first place, the parts of the palate that are without median attachment are pushed by the tongue up into the nasal passage as far as the inferior turbinate will allow. Figure IX. Secondly this obliquity is further increased by the fact that as the maxillæ are rotated towards the median line on an axis situated somewhere above the level of the palate, the palate processes further deviate from the horizontal and approach the vertical position. Both of these factors materially lessen the amount of available bony palate tissue at our disposal. As a result, the whole palate may be narrower than normal when approximation is completed. In fact, in some of these cases we will have to resort to muco-periosteal flaps for closure, after narrowing the cleft.

However though in our attempt to procure bony closure we may be embarrassed by the up tilting of the palate processes, this does not apply to the flap operation whether this is resorted to immediately or subsequently, for the whole of the mucoperiosteum is available as soon as it is detached, and the success of the first operation is to be measured not by the width of the cleft that remains, but by the relative approach of the width of the new jaw to the normal. It is absolutely necessary that there be union of some tissue across the cleft, otherwise it may spread as soon as the wires are removed. For this flap operation I think new horse hair has advantages over every other suture material and if mattress sutures are used no difficulty will be experienced in getting the raw surfaces in apposition. The operation is done at two sittings while the lip is ordinarily repaired later.

Personally I see no reason why the repair of the lip should not closely follow the closure of the hard palate and thus early correct the facial deformity. This is my preference. I have on several occasions done the hard palate operation after the lip had been repaired, but I found

it more difficult, for the open lip gives more room for the passing of needles through the bone but it does not greatly facilitate the median suture of the palate. The earlier the operation is done, the better. There are many reasons for this: Mr. Lane has insisted on the early operation on account of the normal development of the naso-pharynx which results. Brophy prefers to do the operation between the ages of three weeks and three months and has called attention to the pliability of the bones at this age. Many observers have attested the comparative immunity to shock that persists for some time after birth. The very young human is peculiarly insusceptible to the influences that produce shock, which is part of the provision against the trauma of parturition. Crile says that the infant loses this immunity by the end of the first week, but from personal observation I think that the child of four weeks has still a good share of it. The evidence pro and con upon which opinions on this part of the subject may be based is much too voluminous to be cited here. However, though the age of three weeks is a desirable time to operate, at three days is better and within the second twelve hours is greatly superior to any other time, for then it is probable that the mother's milk may be preserved. The operation facilitates feeding of the infant, but a final argument for the early operation, and I think a very strong one, is the consideration of the feelings of the parents, who are afflicted with such a calamity.

It can be done with relative success though greater risk at twelve months or later. The sewing of the soft palate should be done before the child learns to talk plainly. I think between six and fifteen months the time of election.

On the theory that every little helps, when I expect free hemorrhage I use Dawbarn's suggestion of blocking blood in the limbs, though at this age they are proportionately very small. For the same reason I place the body in the reverse Trendelenberg position and to facilitate the operation, place the head in the Rose position. The combination of these two positions is ideal when correctly proportioned.

I consider this operation one of the most rational and, where indicated, one of the most useful in surgery and destined to last, in principle if not in detail, as long as our present surgical science remains. It is seldom that the superiority of a surgical procedure is so demonstrable that it is without competitors and this one is no exception.

I have reduced the width of a cleft very materially by digital and special instrumental pressure, but have abandoned the procedure because it is but partially successful and it precludes doing the effectual operation at the most advantageous time.

Dr. G. V. I. Brown, of Milwaukee, has elaborated a successful system of narrowing clefts by buckles passing across the palate attached to molar bands after these teeth have erupted. Then after doing the flap operation before the child learns to enunciate plainly, the arch is again spread to occlusion. In his hands this has been very successful, owing I

think largely to his individual skill. His operation is to be recommended for wide clefts that have passed the ideal age, but I do not think it should be considered a substitute for the early operation when one may choose the time.

The Brophy operation early corrects the most evident and revolting deformity and when one considers the risks to life involved in two years of a wide open palate, this operation must be considered at least equally safe. With Mr. Lane's operations for early closure, I have had no personal experience, for the anatomical correctness of the operation just described has always appealed to me too forcibly to discard it.

Metropolitan Bldg.

A NOTE ON THE TREATMENT OF DISLOCATION OF THE PERONEAL TENDONS.

By EDWARD A. TRACY, M. D.,
Orthopedic Surgeon to Mt. Sinai Hospital, Boston.

This note is based upon anatomical investigation made by the writer several years ago, together with the reported treatment of cases found in the literature of the subject.

In this injury, as the common sheath of the peroneal tendons and the external annular ligament (here intimately connected together) are torn across, the chief indication (in recent cases) after the replacement of the tendons in their trough, is to maintain the torn parts in approximation while reunion takes place. This necessitates rest for the structures involved for a period of about four weeks. The foot should be immobilized in the position at right angles to the leg, between flexion and extension, and neither inverted nor everted, as this position relaxes the calcaneo-fibular ligament. This ligament being relaxed, the tendons are accommodated in their trough, and there is no strain by pressure of the tendons against the torn annular ligament. Reerink¹ applied strips of adhesive plaster at right angles to the direction of the tendons, and by this method retained the tendons in their trough. He immobilized the foot for five weeks and obtained a good result, as shown by examination of the patient five months later. Fairly often the nature of the injury has not been recognized immediately after the accident, and a condition of chronic displacement of the tendons has resulted. For this reason it is important that all sprains of the outer ankle should be carefully examined for dislocated or dislocatable tendons. I have had two cases of chronic dislocation of the peroneal tendons, both of which had been treated at the time of the injury as simple sprains of the ankle-joint. Beach,² in 1874, reported a case likewise mistaken originally for a sprain. Legouest,³ in 1868, reported a case "of luxation of one of the peroneal tendons consecutive to a foot sprain."

For chronic displacement of the peroneal tendons, the operation done by Kraske,⁴ and also by Kramer,⁵ has proven curative. This operation consists in laying bare the outer ankle region, and repairing and restoring the torn common sheath of the tendons and the external annular ligament, which are intimately connected in this situation. This is done by cutting a flap of periosteum on the lower portion of the fibula, splitting off the fibula (if desired) a thin layer of bone adherent to the flap of periosteum, and turning and binding down this periosteal flap, with sutures, to the common sheath and the tissues back of the tendons.

The wound is then sewn up and the foot immobilized for four weeks. The object of the operation is to restore the torn tendon sheath and annular ligament by a structure as strong as the original.

Though several surgeons (Cheyne and Burchard,⁶ Tillmans,⁷ Whitman⁸ and Monks⁹) have advised deepening the peroneal groove of the fibula, the advice being based upon an erroneous idea of the mechanism of this dislocation and upon the erroneous assumption that shallowness of the peroneal groove is abnormal, only one case has been reported in which this deepening was done. The operation was done by Albert and was a failure. Deepening the peroneal groove of the fibula in the operative treatment of dislocated peroneal tendons is contraindicated for the following reasons: The groove in the fibula is normally shallow, and it may be taken for granted that nature's normal forms cannot be improved upon. Again, in deepening this groove, there is danger of severing the calcaneo-fibular ligament and thus weakening the ankle-joint—for this ligament is the middle fasciculus of the external lateral ligament of the ankle-joint. There is also danger,—not a serious one with aseptic technique,—of opening the tibio-astragular joint sac. Even though neither of these misadventures happen, the deepening of the groove is useless, because the functioning of the tendons tenses the calcaneo-fibular ligament, which lifts the tendons away from the groove and causes them to press against the annular ligament. The anatomical conditions that are present explain the failure of the operation done by Albert. It is the external lateral ligament and not the peroneal groove of the fibula that restrains the tendons from slipping over the maleolus. The reconstruction of the annular ligament is essential for the success of the operation to restore the dislocated peroneal tendons to their normal position and function.

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THE VALUE OF COLOR PHOTOGRAPHY IN THE TEACHING
OF PATHOLOGY.

By GUTHRIE McCONNELL, M. D., of St. Louis.

In the teaching of gross pathology or in the presentation of specimens before large audiences there are many difficulties to be overcome. There must be some way that will enable the instructor to lay stress upon the significance and proper interpretation of the color values. This may be done with a specimen that has just been removed by an operation during life or obtained at autopsy, provided that the number of individuals is not too great. If, however, those who are to receive the instruction are not present, nor can be for several days, the question becomes more complicated.

There must be some method devised that will permit of the colors being retained or reproduced in such a manner as to give a correct idea of the original structure. The indications of inflammation can be greatly modified or even obliterated within a comparatively short time. In demonstrating to the student it is not sufficient to take some colorless specimen and say to him that it illustrates certain stages of inflammatory conditions. The same holds true in the presentation of material before medical societies.

The goal that is aimed at by all is the retention of the original colors of the tissues or else in some way to make a permanent reproduction of them. This problem has been worked upon by many men for many years.

The fresh specimen is of course the most valuable for teaching purposes, and its value depends upon the presence of the colors. If it could be kept in that state the greatest use could be made of it before limited numbers of men.

To bring this about various formulæ have appeared from time to time of solutions the purpose of which is to preserve the specimen in its natural colors. The best known of these methods is probably Kaiserling's although Pick's solution is frequently used. The drawbacks to these are that they require the expenditure of considerable time and trouble, the results being commensurate with the patience of the one doing the work. The colors also, in most cases merely approximate the originals. The sharpness and brilliancy are to a large extent destroyed and only suggest what was present in the fresh state.

Granting that the tissues may be preserved with their colors comparatively unaffected there remain certain conditions that will interfere with their employment for teaching purposes. It is not possible to have every member of a class of more than a very few individuals get a good

view of the material. Even if it were possible to hand it around from one man to another, the instructor will in all probability have passed on to another subject before the specimen has been examined by all.

It is therefore necessary to consider means by which everyone can obtain a good view of the material while that particular instance is being discussed. This can be done to some extent by means of photographs, drawings or colored sketches made while the specimen is still in its fresh state. As can be readily understood these methods are not applicable as a rule on account of the necessity of employing some one possessing the requisite skill to perform the work.

It was hoped that the epidiascope would be able to throw images of fresh specimens upon the screen but this method has not proved very satisfactory. The main drawback being the impossibility of so focusing a convex surface as to give a sharp reproduction in all planes. A picture or a flat section of tissue can be shown fairly well but not with very great distinctness on account of the loss of light.

The photographs or the drawings may themselves be colored by hand later on, but this is not accurate as the colors must be applied with no other aid than the memory or notes made at the time of the operation.

In this way, however, the colors may be approximated and more individuals may examine a photograph or drawing than a pathological specimen.

But as the main object in obtaining these gross specimens is the purpose of instruction it is necessary not only to have either the fresh specimens or their accurate reproductions but there must be some means by which a large number of persons may be shown them. It is not possible to satisfactorily demonstrate a single specimen or a single drawing to more than a very few men.

To render the greatest service to the greatest number the object to be shown must be in equal view of all. The best way in which this can be done is by means of the projection apparatus. By using a positive plate reproduced from the negative the picture may be thrown upon a screen and demonstrated to all.

There are even in this method difficulties to be encountered that limit its value. In the great majority of instances there are only various shades of black and white obtainable in the pictures. The general contour of the subject is demonstrated but little or nothing can be shown concerning the colors that were present originally. Occasionally colored pictures of the objects are employed but these have the same drawbacks as were mentioned in the matter of colored drawings. The work has to be done without the fresh specimen as a model, as it is hardly possible to take the photograph, make the lantern slide and color it while the tissues are in a satisfactory state.

For a number of years, however, the projection lantern has been one of the most valuable adjuncts in the teaching of pathology. Instead of having row after row of wet or oily tissues from which the color had

long disappeared, numerous lantern slides illustrating the specimens could be employed. They possess the advantages of being much less bulky, easy to handle and most important of all, can be so presented as to demonstrate to every one in the class the particular variety of lesion that is being discussed by the lecturer.

It can be readily appreciated that the ultimate point to be attained would be a method by means of which the original colors could be preserved and yet allow of projection upon a screen. This of course means color photography so perfected as to permit of its use by others than experts.

For nearly a hundred years many attempts have been made to devise some scheme by which objects could be photographed and the natural colors reproduced. In carrying on these investigations the underlying principle that has been followed has been the Young-Helmholtz theory of color vision* "which supposes that the normal human eye is sensitive to only three fundamental colors; that is, that the points of sensitiveness of the retina, whatever they may be, are of three kinds. When white light falls upon the retina all three are excited to a definite (or equal) proportion, and when this proportion of excitation varies we become conscious of color. Granting this, it follows that if the color can be found that corresponds to each kind of sensitiveness, we shall have three colors that will, by their mixture, serve to imitate every possible color, including, of course, black and white. These three fundamental colors have been determined from time to time by various investigators, and may be roughly described as red, green and blue.

In 1855 Clerk Maxwell made use of the above theory by taking three separate protographs through pieces of glass colored respectively red, green and violet. Then by means of three lanterns the three pictures were superposed upon the screen with the result that the original colors of the object were reproduced. In this process the three necessary colors were added separately by the use of the three lanterns.

This method was rendered really practicable by Ives of Philadelphia, in 1888. The apparatus that he devised for the purpose consisted of a camera for taking the three color records, a triple lantern for projecting the picture on to the screen, and the photo-chromoscope. This last being a compact apparatus containing three colored glasses, one for each color required, and a system of mirrors, so that the three colored images are seen superposed by looking in at the eye piece. The one drawback is that an apparatus has to be used for seeing the picture.

The necessity for taking three separate negatives is obviously a circumstance to be avoided if possible, and the method of avoiding it was pointed out by Du Hauron in 1869. It appears that the only practicable method of making one plate suffice is to divide the surface of the plate among the three colors, using such small parts of the plate for each that

*The descriptions are taken from an abstract on "The Photography of Color," appearing in the *Scientific American* Supplement May 2, 1908.

when viewed in the usual way these parts merge into each other, as the fine detail of the impression of a copper or steel engraving does. The drawback to all such methods is the great loss of light. If any color is represented by only one-third the area of the patch that stands for it, the area which might otherwise be all color is two-thirds black. Thus two-thirds, more or less, of the light that would form the image in Ives's apparatus is lost in a one-plate process, and the picture is correspondingly duller unless the light is proportionately increased. This can be accomplished if the picture is in the form of a lantern slide, by using the same light in the lantern but reducing the diameter of the picture on the screen from 10 feet to 6 feet or less, or from 8 feet to something under 5 feet.

The first successful methods of this kind were worked out from 1892 to 1898. The three colors were applied regularly in lines and applied to the glass by means of the ruling pen.

Another method recently devised by Mr. John H. Powrie of Chicago, is capable of making lines twice as fine as by ruling (more than 600 to the inch), and the troubles of overlapping and of uncolored gaps are entirely obviated.

Instead of arranging the three colors in lines, they may be disposed in small hexagon or square patches. These methods have been patented, but nothing practical has yet come of the idea. The third alternative is a random grain, and a method of doing this by means of starch granules, which was described by Messrs. Lumière, of Lyons, rather more than three years ago, has just been commercially perfected. Quantities of starch granules of approximately uniform size are stained respectively red, green, and blue, mixed as thoroughly as can be in such proportions as present a neutral gray to the eye, and dusted over a prepared plate so that they adhere in a single layer, which is then pressed or dusted with a black powder (or both) to fill up the small spaces between the granules. A protective waterproof varnish is applied, and on this is spread an orthochromatic emulsion, so that the plate is complete in itself—photographic plate and color screen in one. It is exposed in the camera exactly as usual, except that the glass side of the plate is put toward the lens, so that the light has to pass through the layer of colored starch granules before it affects the sensitive film. The plate is developed, and the resulting negative, instead of being fixed, has the metallic silver that constitutes the image dissolved away, and the remaining silver salt reduced to the metallic state, thus transforming the negative into a positive. When viewed as a transparency, the color as well as the form of the original are seen. Some very excellent results have been obtained with them, but the colors are readily affected by error in their treatment. The "grain" of these plates is not so fine as one might suppose from the fact that starch granules are used, for it is apparently impossible to thoroughly mix the differently colored granules. They occur on the plates in groups up to a dozen or more

of one color, and the groups are visible by a magnification much too low to show the individual granules."

It is this form of color photography that is at present in such a stage of development as to be useful for purposes of instruction. But there are some disadvantages connected with its employment. The plates are quite expensive, but as great reductions have been made in the price during the past few months, it is quite possible that they will become even cheaper.

The length of time required for the exposure is a great hinderance if pictures of living objects are to be taken. This is due to the light having to pass through the layer of starch granules before falling upon the sensitive film. In doing which two-thirds of the light is not transmitted. Even in direct sunlight an exposure of several seconds is necessary.

After the picture has been taken the method of development is quite tedious, and it also requires the services of two people.

The results, however, when one obtains a good positive, recompense for the time and labor expended.

If the original object has had marked contrasts of colors they are very faithfully reproduced and we then have the means of exhibiting interesting specimens before a large number of individuals.

In a series of demonstrations the use of color photographs could be of invaluable assistance. To be able to reproduce for instance numerous pictures of the various stages of pneumonia or of tubercular lungs would add greatly to the value as well as to the interest of the lectures.

It is no longer possible to teach medicine from a text book and of all branches of that subject, the one most requiring the actual material is that of pathology. As the ability to practice medicine depends largely upon the knowledge of the underlying processes of disease it can be readily seen that any way that will advance its teaching must necessarily add to the proper equipment of the medical graduate.

The introduction of color photography must greatly increase the facility for the transmission of pathology from the instructor to the student. Purely didactic teaching of the subject is impossible. Consequently various improvements have been made and it is now possible to preserve in the most convenient manner correct color reproductions of pathologic material. Instead of having to show either a bleached specimen or a black and white picture and explaining as well as possible the different colors with their significance a teacher is now able to present the equivalent of the original.

As is well appreciated by all, a much greater impression can be made through the sense of sight than that of hearing.

CLINICAL MEMORANDA.

INTRAOCULAR HEMORRHAGE: A PROBLEM IN DIAGNOSIS.

By SAMUEL D. RISLEY, M. D.,
Attending Surgeon, Wills Hospital, Philadelphia, Pa.

Case.—F. H., a farmer, aged 36, was referred to my clinic October 3, 1908, complaining of total blindness in the right eye. He related that while at work on his farm at 9 A. M. a web-like screen, filled with dark spots which he likened to a flock of blackbirds, settled downward before his right eye. The web grew more opaque until at noon, three hours later, it was a dark, dense mass which blinded him completely but which he described as a black mass projected in front of the eye. When seen first at the clinic the iris reacted consensually, tension was normal, there was no light reflex from the fundus, but with a pencil of strong light thrown obliquely through the dilated pupil a dark brown mass could be seen back of the lens, apparently filling the vitreous chamber. There was no pain. He had quantitative perception of light in the lower half of his field of vision but not in the upper half of the field. The left eye was healthy but $V=6/xii$, the diminished acuity being accounted for by an error of refraction. Three years ago he had applied at the Wills Hospital for treatment for some ocular discomfort, but there seems to have been no sufficient evidence that at that time he had any serious affection of his eyes other than the discomforts due to an uncorrected error of refraction. On October 7, the perception of light in the lower field was improved and faint gray reflex could be obtained from the upper periphery of the fundus. Transillumination also gave a gray red illumination throughout the upper half of the ball when the illuminator was placed far back, near the equator. The lower half was, however, entirely opaque. An oblique pencil of light thrown through the pupil revealed a small, bright red, linear blood clot, resting upon the old coagulated mass back of the lens in the lower periphery.

Many points of interest when considered from the standpoint of diagnosis are presented in this history. The healthy condition of the fellow eye; the sudden appearance of the web apparently settling down before the right eye thus pointing to a lesion in the lower part of the fundus; the rapidly increasing blindness which gave the sensation of a projected opaque mass; the absence of premonitory symptoms and pain, the normal tension of the globe, the complete opacity for transillumination in the

lower half of the eyeball, present an ensemble of symptoms subject to different interpretations. The settling down of the web apparently from above suggests detachment of the retina; the sudden onset of blindness in the lower part of the eye caused by a black mass, was unquestionably due to a profuse intraocular hemorrhage. If the web first seen was in fact due to detachment of the retina, we still stand in need of an explanation for the detachment, since the eye was not a near-sighted eye, nor had he ever complained of symptoms which might, with reason, be ascribed to eyestrain or to exposure to the sun and dust in the harvest field. That the detachment of the retina was not due to any ordinary cause is suggested by the rapidly following hemorrhage which revealed a tendency to recur, as shown by the bright blood clot on top of the old shrinking clot. There was no history of any traumatism. Why should the man therefore have had detachment of the retina, followed by a profuse intraocular hemorrhage? Efforts at transillumination discovered a complete opacification of the entire lower half of the eyeball. This observation is also open to different interpretations. Might the opacity in this part of the ball have been due to the greater density of the blood clot, secured by the gravitation downward while the man was in an erect posture, while in the opposite or upper portion of the ball a corresponding thinning of the clot took place sufficient at least to permit a slight gray reflex described in the clinical history? Notwithstanding this possibility we can but consider the fact that the onset of the retinal detachment, the profuse hemorrhage in a man of 36 years of age in good health and with none of the usual causes for either occurrence being present, point with great probability to the presence of a malignant intraocular growth in the lower ciliary region of the choroid. The practical impossibility of deciding affirmatively this important diagnostic point has led me to keep the man under observation after apprising him of the possible serious consequences of too long delay.

One fact in the history, not before noted, may possibly shed some light upon the etiology. When the impairment of vision began, the man was driving his team loaded with sacks of grain. He turned in his seat to tie the mouth of a sack at the moment when the web settled painlessly before the right eye. A short time before he had aided in loading the wagon. It is possible that the muscular strain exercised in lifting a sack of grain may have caused the rupture of an intraocular blood vessel, or the detachment of the retina and choroid,—one or both.

1728 Chestnut Street.

MEDICAL AND SURGICAL PROGRESS.

CONCERNING STARCH DIGESTION IN INFANCY.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

1. NUTRITION, DISTURBANCES OF NUTRITION, AND NUTRITIONAL THERAPY OF THE CHILD.—Czerny-Keller.
2. TEXT BOOK OF THE DISEASES OF NURSINGS.—Finkelstein.
3. STUDIES IN INFANTILE DIGESTION.—Friedlander (*Journ. A. M. A.*, December 19, 1908).
4. MODERN LABORATORY FEEDING.—Rotch (*Archives of Pediatrics*, September, 1908).
5. CARBOHYDRATE INCAPACITY IN INFANTS.—Kerley (*Archives of Pediatrics*, March, 1908).
6. PFLAUNDLER & SCHLOSSMAN ENCYCLOPEDIA OF DISEASES OF CHILDREN.—Camerer.
7. MALT SOUP AND ACIDIFIED MILK.—Terrien (*Arch. de Med. des Enf.*, January, 1908).
8. MALT SOUP AND ACIDIFIED MILK.—Mery & Terrien (*Arch. de Med. des Enf.*, May, 1908).
9. STARCHY DIET IN GASTROENTERITIS, ETC.—Ferreira (*Arch. de Med. des Enf.*, May, 1908).

Of the innumerable questions arising from the problems of substitute infant feeding, none has attracted more attention than the discussion of the relative digestibility of the three classes of food stuffs—proteids, fats and carbohydrates. Until very recently, here in America, it has been most generally held that the proteids offered the greatest difficulties in the way of digestion and assimilation. Seeing that cow's milk is the most universally used substitute for mother's milk, the study of its proper modification for infant use has been most zealously pursued. And the problem of the proteids of cow's milk has been considered to be the most serious one confronting those who must of necessity direct substitute feeding for infants. Into the various phases of this question of proteid indigestibility, it is no part of this present cursory review to enter. Suffice it to say that in very recent times there has come a change, and it is now held by many of our most scientific students of infant feeding, both in America and more particularly abroad, that the difficulty of modification of cow's milk for human infantile digestion is not to be ascribed to the proteids at all, but rather to the fat. Just now it is the fat which is held responsible in large measure for the difficulties which attend the feeding of cow's milk, however modified, to babies. But even this question of fat indigestion cannot be considered as settled. Under

these circumstances it would appear timely to review briefly, present day opinions with reference to the question of the digestibility of the carbohydrates in early infancy, with special reference to the starches.

For a long time it had been held that young infants could not digest the starches.

For years the experiments of Korowin (reported in 1875) were regarded as final. Working with extract of the human pancreas, freshly triturated, Korowin found that the extracts of pancreas of children in the first three weeks of life showed *no* action on starch solutions. Pancreatic extract of children of four weeks and over caused marked alteration in the starch solutions after one-half hour's fermentation. The solution became thinner and more transparent and after treatment with alcohol, traces of a reducing substance were found. But in recent years various observers have made careful studies which have proved, indisputably, that there is an amylolytic ferment in the pancreas of even the newly born. Moro, Jakubowisch and Gillet have shown the presence of a diastatic ferment in the pancreas of the newly born which, though weak at first, rapidly becomes much more active. The diastatic power of the saliva has also been shown to be active very early, by Heubner, Montague and Schilling. Heubner and Carstons have shown that the young infant can digest appreciable amounts of starch. Working with an original modification of Einhorn's bead test, the author of this review has demonstrated that even newly born infants can digest starches perfectly, using for the test cooked flour. These experiments were made after the series published in the article mentioned.

From the clinical viewpoint the advantages of carbohydrate feeding properly regulated, have long been recognized. Jacobi's advocacy of cereal decoctions as diluents to cow's milk, and aids in its more easy assimilation, is of many years' standing. And the good results which have followed the dilution of cow's milk with oatmeal or barley water instead of with plain water, are fortunately matters of common knowledge. Indeed, it is recognized that the addition of the cereal decoctions is of service not only in so far as it renders the curd of cow's milk more digestible, but also because of its own nutritional value. There is still of course much difference of opinion as to details of use of the starches. Thus, Rotch, in a recently published review of modern laboratory feeding, has this to say: "Starch can be used for two purposes: (1) To render the precipitated casein curd finer by mechanical means and (2) for purposes of nutrition. For purposes of nutrition each physician must decide for himself how early he considers it well for starch, as a nutrient, to be added to an infant's food, and according as he prefers to call into action the infant's amylolytic function before it has been fully developed, or to wait until such function has been practically developed." Contrast with this, only mildly favorable, opinion that of Kerley, who, in discussing carbohydrate feeding in infancy, has this to say of starch: "There is no age limit for cooked starch feeding. That the youngest infant can digest starch has been proved." After referring to Moro's find of a diastatic enzyme in the pancreas of infants dying at birth and in others of tender age, he reports that Craig found such an enzyme in the pancreas of an athreptic child dying at six weeks. Kerley conducted a series of 677 stool examinations in 87 institution children under one year of age. Of 60 cases carefully studied, 41 showed good starch digestion, 19 indifferent or poor starch digestion. Eleven of those with good starch capacity were under six months of age. His general observation was that if starch was not digested, it did little harm though it sometimes

caused constipation. He holds that it has been demonstrated conclusively, both from the experimental and the clinical standpoint, that the youngest infants can digest starch.

In his article on metabolism and nutrition in the first year of life in Pflaundler and Schlossman's Encyclopedia, Camerer refers to the fact that the use of flour and dextrin had for a long time fallen into discredit. He holds that this is to be ascribed partly to unfavorable results of *feeding* with gruels (not to be confounded with the use of gruels as milk diluents), and also to the opinion that the diastatic power of the salivary glands and of the pancreas is not sufficiently developed in the young infant. Referring to the fact that many deem it a mistake to add flour before the tenth month, he says: "Recent investigations have revealed the fact that small amounts of flour can readily be digested so early as the first weeks of life, and that it is frequently possible to obtain very good results even at this time, but particularly so later on, after cautious additions of flour or dextrin to the food. The influence on the movements of the bowels is frequently very favorable. Constipation is relieved, the passages become uniform and soft. Nevertheless, the young infant should be watched carefully when fed on flour, since an excess may occasionally cause sudden catastrophes. As soon as the passages give a distinct reaction for starch, or become very acid, the addition of flour has to be reduced or stopped entirely. As a rule such preparations may be added to the food mixture in the following amounts: during the first months about 1 per cent., during the second about 2 per cent., during the third 3 per cent., and from then on 4 or 5 per cent."

Finkelstein, of Berlin, whose wide experience and generally sound judgment give special weight to his opinions, is equally emphatic. In his text book on diseases of nurslings he says emphatically that while the starches are never to be used as the sole diet, while they may not even preponderate in the diet with safety to the child, there can be no question of their value when added to the diet in proper amounts under careful supervision. Referring to the value of the addition of cereal decoctions to milk, he refers to the published opinions of Jacobi, Epstein, Schmid, Monard, Czerny, Keller, Neumann, Heubner and others whose views are in complete accord with his own experiences. He finds that the addition of cereals to milk is not only allowable, but to be most warmly recommended not only in older but also in very young infants. Then he says specifically that from the standpoint of digestion and gain in weight, the advantages of the cereal decoctions are found in the finer subdivision of the casein curd in the stomach, in the relief from constipation, in the disappearance of soap and dyspeptic stools, in the proteid-sparing power thus exercised, and finally in the general increment of growth. He believes that the cereal milk mixtures are the most valuable of all methods of infant feeding at present in vogue for healthy children, very often from birth, but certainly after the second or third week of life.

The value of carbohydrate diet during acute gastrointestinal disorders of infancy is so generally recognized as hardly to need much comment. Practically all schools of pediatricians are agreed on this point. As Mery and Terrien have put it, it is actually superfluous to insist upon the advantages of carbohydrate diet for infants troubled with digestive disorders and not standing cow's milk well. Terrien has laid special stress upon the therapeutic value of a mixture of cereal decoctions and acidified milk. He finds that the mixture works well, that both the cereal and the acidified milk have an antiputrefactive action, that both are stimulants

to pancreatic secretion. It will be remembered that in the system of buttermilk feeding, so generally used in the treatment of gastroenteritis and used as diet for healthy infants, systematically, in Holland, wheat flour is added to the buttermilk to the extent of 2 to 3 per cent.

Ferreira points out also that there is no real justification, either on clinical or theoretic grounds, for the fear of giving starches, in proper amounts, to even young infants. He calls attention to the antiputrefactive powers of the starches, to their consequent value when a stopping of a proteid diet is essential, as in the putrefactive diarrheas of infancy. As Heubner has pointed out, the carbohydrates present a poor culture medium for proteolytic bacteria, which nourish themselves on casein. In such cases the carbohydrates act indirectly as intestinal antiseptics. Combe has shown that the carbohydrates not only prevent putrefaction of casein but also favor the production of lactic and succinic acids.

No attempt has been made in this brief review even to allude to the use of the various sugars and specially prepared flours which may so often be of decided benefit in the infant's dietary. It is merely desired to point out that the old belief of the indigestibility of the starches for infants has no longer any justification. It is unquestioned that, given under proper condition, more especially in the form of cereal decoctions, the starches are of enormous value to the infant economy; that to a very great extent they have played a rôle in the modern successful modification of cow's milk.

AIDS TO THE DIAGNOSIS OF APPENDICITIS.

A REVIEW OF RECENT LITERATURE.

By ALBERT E. TAUSSIG, M. D.

1. PRACTICAL VALUE OF LEUCOCYTE COUNT, ETC.—*Albrecht (Zeitschr. f. Geburtsh. u. Gynaek., Vol. LXI, No. 1, Abstr. by Sachs q. v.)*.
2. A NEW TEST FOR THE DIFFERENTIAL DIAGNOSIS OF APPENDICITIS.—*Chase (Journ. A. M. A., Vol. L, No. 8)*.
3. UNEQUAL TEMPERATURES IN THE TWO AXILLAE IN ACUTE EPITYPHLITIS.—*Hoenck (Deut. med. Woch., 1908, No. 35)*.
4. A PATHOGNOMONIC SYMPTOM (OR SIGN) OF APPENDICITIS NOT HITHERTO DESCRIBED.—*Illoway (Arch. of Diagn., Vol. I, No. 3)*.
5. MCBURNEY'S POINT AND ANOTHER POINT IN APPENDIX DIAGNOSIS.—*Morris (Journ. A. M. A., Vol. L, No. 4)*.
6. CLINICAL BEARING OF CUTANEOUS TENDERNESS ON VARIOUS ACUTE ABDOMINAL DISORDERS, ESPECIALLY APPENDICITIS.—*Robinson (Quart. Journ. of Med., Vol. I, No. 4)*.
7. PRODUCTION OF TYPICAL PAIN AT MCBURNEY'S POINT BY INDIRECT MEANS.—*Rovsing (Centralbl. f. Chirurg., Vol. XXXIV, No. 43)*.
8. THE DIAGNOSTIC AND PROGNOSTIC SIGNIFICANCE OF THE DIFFERENTIAL LEUCOCYTE COUNT.—*Sachs (Arch. of Diagn., Vol. II, No. 1)*.
9. BLOOD EXAMINATION IN SURGICAL CASES.—*Sondern (N. Y. Med. Journ., 1907, No. 4)*.
10. UNILATERAL TEMPERATURES IN APPENDICITIS.—*Widmer (Muench. med. Woch., 1908, No. 12)*.
11. BLOOD EXAMINATIONS IN SURGICAL DIAGNOSIS.—*Wile (Am. Journ. of Surg., January, 1907, to May, 1908)*.
12. SONDERN'S DIFFERENTIAL LEUCOCYTE RESISTANCE LINE IN DIAGNOSIS AND PROGNOSIS OF ACUTE APPENDICITIS.—*Wilson (Northwestern Lancet, July 1, 1908)*.

While a typical case of appendicitis presents no especial diagnostic difficulties, atypical cases are not rare in which the diagnosis is by no means easy. Even when the presence of appendicitis has been established, it is often difficult or even impossible to distinguish positively between catarrhal, suppurative and gangrenous forms, between comparatively mild and fulminant attacks. Hence all diagnostic methods that aid us in determining with greater precision the degree of appendical infection deserve a welcome.

Widmer has made an interesting observation that may prove to be of diagnostic value. He has seen a number of cases of acute appendicitis in which the right axillary temperature was distinctly higher than the left. In one case especially, a perforating appendicitis without adhesions, the right axillary temperatures averaged one degree Fahrenheit above the left, the greatest difference being nearly three degrees. This asym-

metry of the axillary temperatures persisted after operation until the peritoneal irritation had completely subsided. He attributes the phenomenon to an angioneurotic affection of the skin comparable to a unilateral erythema. Hoenck has made similar observation but inclines to a different explanation. He believes that severe cases of appendicitis irritate the lumbar sympathetic ganglia and so cause a unilateral vasodilation sufficient to produce a difference in the cutaneous temperatures of the two sides. When the right lumbar ganglia are affected, the temperature in the right axilla is higher than that in the left. In cases of longer duration, the irritation may cross over to the left lumbar ganglion and produce a higher temperature in the left axilla. These are the comparatively rare cases of appendicitis in which the tenderness in the left lumbar region exceeds that in the right. Obviously the phenomenon of increased right sided axillary temperature will be of diagnostic value only when unmistakably present. Its absence can have no negative significance. Morris in an important communication utilizes the lumbar ganglia more directly. He draws a line from the navel to the right anterior superior spine of the ileum. On this line, an inch and a half from the anterior superior spine lies McBurney's point, whereas a point on the same line an inch and a half from the navel marks the location of the right lumbar ganglia. In the adult, these two points lie some six inches apart. The left lumbar ganglia lie an inch and a half to the left of the navel. In an acute appendicitis, McBurney's point is of prime importance; but later, when the acute inflammatory process has subsided, leaving a mucous inclusion or scar tissue, there may be little tenderness on pressure over McBurney's point, but decided tenderness over the right lumbar ganglia. In the dyspeptic type of appendicitis due to irritation of nerve filaments entrapped in the inflammatory exudate, tenderness may be entirely absent over McBurney's point, but will be present over the right lumbar ganglia. The same will be true, when the appendix is congested without the presence of infection, as in many cases of loose kidney. In all these conditions, pressure over the left lumbar ganglia will not be painful. When the trouble is located in the pelvic organs, on the other hand, both lumbar ganglia will be tender, whereas affections of the upper abdomen will involve neither. Morris sums up his conclusions as follows: "A patient comes in with the appendix in the form of a question mark. Right lumbar ganglia tender, alone—appendix trouble. Right and left lumbar ganglia tender, together—pelvic trouble. Neither right nor left lumbar ganglia tender—trouble somewhere cephalad from pelvis and appendix." Morris's views have been confirmed by a number of other observers and seem to have real diagnostic value.

The so-called "Head's Zones" of superficial tenderness have a certain though perhaps not very definite diagnostic value in internal disease. As modified by Sherren in 1903, they have been subjected to a close clinical test by Robinson, who finds them of considerable importance in the diagnosis of obscure cases of appendicitis. These areas of tenderness are most frequently in three forms. (1) The largest area is in the form of a continuous band corresponding roughly to the distribution of the whole of the sensory fibres of the eleventh right dorsal segment. Beginning at the back close to the middle line, the band slopes slightly downward. As it is followed around to the front, its lower edge just skirts the crest of the ileum and it ends in the hypogastrium. (2) Another area is triangular, bounded below by Poupart's ligament, above by a line drawn out from the umbilicus and to the inner side by a vertical line just to the right of the middle line. Its apex is at the anterior superior spine of the ileum. (3) The third form is a circular patch

just below the centre of the line joining the right anterior superior spine of the ileum and the umbilicus. A patient displaying an area of superficial tenderness of one of these three definite varieties is, in the majority of cases, suffering from appendicitis. The tenderness is apparently of reflex origin and due to tension within the appendix. It usually disappears when suppuration sets in and is most frequently present early in the case. It is found as frequently in subsequent as in first attacks of appendicitis and may persist after all other signs of the disease have disappeared. It may be entirely absent and similar areas of superficial tenderness may exceptionally occur in renal colic, perforating duodenal ulcer, ordinary intestinal colic and pelvic peritonitis. While thus not at all pathognomonic, this sign may occasionally be of assistance in the diagnosis of early or of chronic appendicitis.

The pain produced by pressure over McBurney's point so characteristic of appendicitis loses much of its diagnostic value since the same phenomenon may be produced by a variety of other abdominal lesions. A method that would produce pressure upon the diseased appendix by means of distension of the cecum could be expected to give more trustworthy results. Rovsing has suggested such a method. He exerts manual compression over the middle of the descending colon, thereby forcing the gases backward into the cecum and immediately eliciting a severe, cutting pain at McBurney's point. He finds this symptom present only when there is disease of the cecum or appendix, but not when the trouble is due to other affections that may produce a painful swelling in the right iliac fossa. In over one hundred cases, he found this procedure to be a reliable diagnostic aid. Chase has independently discovered the same phenomenon. His procedure, which is apparently somewhat superior to that of Rovsing, is as follows:

"The patient is best placed on a hard, low bed or table. The knees should be flexed and two pillows placed under the head and shoulders, giving a dorsal semirecumbent position, rendering the abdomen flaccid for the most satisfactory abdominal compression. The surgeon stands on the patient's left, facing the feet. The palmar surfaces of the fingers of the right hand are placed under the patient's left inguinal region and the fingers of the left hand used to reinforce the right. Deep pressure is then made backward, slowly drawing the fingers deeply and forcibly upward under the left costal arch. This procedure is intended to compress the lower portion of the descending colon and force its gaseous content into the transverse, and thence to the ascending colon. The pressure being maintained with the fingers of the left hand, the right hand is then removed and placed over the upper portion of the descending colon, or better over the transverse colon, and the fingers are quickly and forcibly depressed. A gaseous compression wave will travel across the transverse and down the ascending colon and on arriving at the cecum will produce cecal distension, yielding a typical sharp pain in the right iliac fossa, if inflammation of the cecum or appendix be present."

Another useful method of exerting pressure indirectly upon the diseased cecum or appendix has been described by Illoway as follows:

"The patient is placed at full length upon the operating table or chair for the purposes of examination. This is made in the usual way, and when all the data have been obtained I tell him or her (*a*) to flex the leg upon the thigh and the thigh upon the trunk.

I now ask if the movement, or rather the upward pressure thus made, causes any pain or soreness in the lower portion of the right half of the abdomen, *i. e.*, the appendicular region.

If the answer is 'no' or 'very little,' either I myself flex (*b*) the thigh more closely, more forcibly upon the trunk or direct the patient to do so. Again I inquire, does it cause pain or soreness, or does it *increase* the pain or soreness? I now have the patient (*c*) extend the leg to full length with a quick and rather sudden movement, and ask whether this has caused any pain or soreness."

Illoway has found that if all three procedures cause pain, appendicitis is invariably present. "Pain produced by forcible flexion (*b*) of the thigh, but not by gentle flexion (*a*), may be due to other causes, but in this case, forcible extension (*c*) will produce no pain." The significant phenomenon is pain produced both by flexion and extension of the thigh. This sign, if confirmed by other observers, would seem to have its field of greatest value in obscure cases of subacute or chronic appendicitis, especially perhaps the dyspeptic form in which the true diagnosis is so often overlooked.

The practical value of the leucocyte count in appendicitis is still a matter of dispute. Often, unquestionably, valuable information as to the existence and progress of an appendicular inflammation can be obtained thereby, but the exceptions seem to be so frequent that many surgeons refuse to allow themselves to be influenced in their procedure by the blood count. When the leucocytosis increases steadily we may safely infer a progressive infection but the absolute degree of the leucocytosis is in itself no indicator of the gravity of the disease. Indeed we may fail to get any leucocytosis both in a very mild case and in a desperately severe one. The relative proportion of the polymorphonuclear neutrophil leucocytes is apparently quite as valuable an indicator of the presence of inflammation as the existence of an absolute leucocytosis and many surgeons lay stress only on the former, disregarding the latter entirely. In normal adult blood the polymorphonuclear neutrophil cells form in the neighborhood of seventy per cent. of all the leucocytes. When this proportion rises to eighty or ninety per cent. or even higher, we may safely argue the presence of an active inflammation. Sondern has suggested a combination of these two methods that may prove to be of great diagnostic and prognostic importance. He believes that the polynuclear percentage is an index of the severity of the infection, while the total leucocyte count depends upon the reaction of the body. The proportion between the two would thus be an indicator of the ability of the body to resist the infection. Wile has been able on the whole to confirm this view. He believes that the relative increase of the polymorphonuclear neutrophil cells in surgical conditions parallels not merely the severity of the infection, but what is more valuable, the degree of toxic absorption. He agrees with Sondern in considering the total leucocyte count as an index to the degree of body resistance. He has summarized his views in the following table: If we designate an increased proportion of polynuclear neutrophil cells in a differential count by *A* and the degree of general leucocytosis by *B*, then:

Slight A { slight infection.
Slight B { fair resistance.

Falling A {
Falling B { convalescence.

Slight A { slight infection.
Marked B { good resistance.

Falling A { lessening toxemia.
Rising B { improving resistance.

Marked A { severe infection.
Slight B { poor resistance.

Rising A { increasing toxemia.
Falling B { decreasing resistance.

While so clear-cut a table cannot be expected always to hold good, still it lends an increased significance to the blood count in surgical affections. In any case, Wile maintains that in appendicitis "a relative neutrophilic polymorphonuclear leucocytosis below seventy per cent. excludes as a rule suppuration or gangrene, when the total leucocyte count is ten thousand or above." Wilson, working with the Mayos' great material, found himself able on the whole to confirm the foregoing table. While drawing no sweeping conclusions, he thinks the following statements justifiable: "1. Sondern's hypothesis, that the polynuclear percentage is an index of infection, the total leucocytosis an index of body reaction, and their proportional relationship an index of resistance, seems to be supported. The more important exceptions to this are in moribund cases and perhaps in children. 2. As practically applied in early appendicitis cases the disproportioned polynuclear increase, *i. e.*, a rising resistance line, indicates a more or less severe infection, which is not being properly cared for by the body. The higher and longer this line, the more serious the case. 3. A proportional polynuclear percentage or a disproportionate polynuclear decrease, if well marked, indicates mild or well-cared-for infection. 4. The value to the surgeon in early cases is but little, since in most early cases the patients are operated on anyway. It may be of some value negatively in indicating that the supposedly acute exacerbations of chronic appendicitis are not present. 5. In cases between the fourth and fourteenth days, the resistance line is of great value to the surgeon in indicating the patient's poor resistance and the necessity for immediate operation. The operative findings in these cases bear out the leucocyte determination with wonderful accuracy. 6. In cases" of chronic appendicitis "a horizontal or falling resistance line indicates that the patient is taking care of the infection. If the infection is severe, as shown by a high though falling line, the patient may perhaps best be given medical treatment rather than submitted to operation. 7. When" a case in which a well marked off abscess exists "is being kept under observation, the resistance line should be determined daily, and should the line begin to rise the patient may be submitted to operation."

Albrecht states the case a little differently, laying chief stress upon the proportion of lymphocytes and eosinophil cells. He says that "when the number of lymphocytes is considerably below normal, the infection may then be regarded as especially serious. The disappearance of eosinophils and mast cells suggests severe infection, and the turn toward recovery is manifested in the blood picture by the marked relative increase in the absolute number of mononuclear leucocytes and eosinophils." Clearly this is essentially stating Sondern's law in different words for it is evident that the greater the proportion of polynuclear neutrophils cells, the smaller will be that of the other white corpuscles and vice versa. The whole matter is of extreme interest and, if confirmed by future observations, promises to be of great practical importance.

THE TREATMENT OF EXOPHTHALMIC GOITRE BY THE ROENTGEN METHOD.

A REVIEW OF RECENT LITERATURE.

By EDWARD H. SKINNER, M. D.

1. GOITRE.—George C. Johnston (*Transactions of American Roentgen Ray Society*, 1907).
2. THE X RAY TREATMENT OF EXOPHTHALMIC GOITRE.—C. Thurstan Holland (*Archives of the Roentgen Ray*, No. 96; July, 1908).
3. A SUMMARY OF THE RESULTS OBTAINED BY THE X RAY TREATMENT OF EXOPHTHALMIC GOITRE.—Geo. E. Pfahler (*N. Y. Med. Journ.*, October 24, 1908).

The form of goitre peculiarly suitable for x ray treatment is the exophthalmic. Here the condition is really one of hyperthyroidism. While the slight hypertrophy of the gland may be present yet the secretory function is exaggerated and the symptoms of tachycardia, tremor and extreme nervous unrest are largely toxic. The first effect of the x ray upon the glandular tissue is inhibition of function and this inhibition may be so complete as to amount to a suppression. The results of operation in other than exophthalmic goitre have been very satisfactory. Kocker reported his second 1,000 cases in 1900 of throidectomy with only four deaths. The results in exophthalmic were four deaths, 45 cured and 10 improved in 59 cases. Johnston speaks of the unsatisfactory results of medical treatment and the multiplicity of remedies, the death rate following operation and complications, and then compares the effectiveness of roentgenization with no death rate and the results as equal or superior. He relates the early disappearance of the exophthalmos, and the relieving of the nervous unrest and tremor. The tachycardia persists for some time but grows progressively less. Freund reports unmistakable benefit in five cases with a restoration of the normal size of gland and condition. It may be argued that ante-operative treatment of goitre is helpful if not curative, and Chas. Mayo states: "We make use of the x ray. From its known action upon the lymphatics and glandular tissue it exerts a favorable action upon exophthalmic goitre in decreasing its over-activity and in some cases seemingly develops something of a capsule and partially changes the character of the gland. While its action may not be permanent, it is a valuable adjunct in preparing advanced cases for operation." Johnston advocates the continued use of the ray for a period of three months with no danger of aphonia and other complications that follow surgical intervention.

Holland reports upon 20 cases in private and hospital practice, all exophthalmic. The diagnosis had been made by the physicians who had referred the cases to him. He makes the following points: 1. An immediate fall in the pulse-rate after the first few treatments, the reduction being permanent. 2. The muscular tremors and nervousness showed signs of improvement from the first. 3. The circumference of the neck

in some cases diminished notably, whilst in others no diminution occurred. 4. The exophthalmos was not materially altered in any of the cases where it was a marked feature. He remarks that early cases will prove to be those most favorably influenced and he sees no reason why the x ray treatment should not be of value and no reason why it should not be combined with the usual medicinal methods.

Pfahler reviewed the world's literature upon the Roentgen treatment of exophthalmic goitre and found 51 cases reported with 42 good results, being 75 per cent. He summarized as follows: 42 good results and nine cases with little or no improvement. In other words, good results in over 75 per cent. of the cases with no risk or inconvenience to the patient. While the number of cases reported is small, still it is sufficient to justify further trial, since there seems to be nothing lost and a chance for much gain by the trial. He concludes: 1. That decided improvement may be expected in 75 per cent. of the cases. 2. This improvement consists of an increase in weight and strength and gradual disappearance of the Basedow symptoms. 3. Some improvement should be noticed within a month and after six to a dozen treatments. 4. When this treatment is properly given there appears to be no danger and no objection to recommending this trial of a month in all cases.

CORRESPONDENCE.

TO THE EDITOR:

In your February issue, page 155, you quote E. W. Ainley Walker's investigations of alleged cures of chronic rheumatism brought about by the stings of bees.

Practitioners of homeopathic medicine have used a preparation of bee poison (*apium virum*) in alcohol as a therapeutic measure in the treatment of rheumatism, Brauns (1835) to the best of my knowledge being the first to make use of the remedy, although he did not use it solely for the relief of rheumatism. Later, a trituration of the entire body of the bee was made and used under the name of *apis mellifica* and, so far as I can ascertain, no differentiation between the two preparations, in a therapeutic sense, was made.

Hering's Condensed Materia Medica (Fourth Edition, 1894) on page 101, has this to say regarding the curative action of *apis* in rheumatism. Symptoms: "Stiffness in the back of neck. Rheumatic stitches in right side of neck. Tensive pain from left shoulder to back of neck." Further on he says: "Violent rheumatism in right, later in left shoulder. Lame feeling in the scapulæ * * * * Drawing pain in the arms; edema of the hands * * * * Sore pain about left hip-joint; later, trembling weakness, unsteadiness * * * * Violent pain in left knee, more outside and to the front. Sensation in the toes and feet as if too large, swollen and stiff."

The quotation given from Hering may, to one unfamiliar with homeopathic practice, appear needlessly prolix and circumstantial; yet, to quote him correctly I must give his words, not my own.

To a homeopathic prescriber the smaller symptomatic details are of peculiar moment in guiding him to the selection of a remedy and while the picture conveyed to the reader by the above symptoms would, in all probability, spell rheumatism, I give the details as printed in Dr. Hering's book. *Apium virum* was in use as a remedy for rheumatism before the year 1840; though not prescribed indiscriminately for every case of rheumatism, it was prescribed and quite frequently.

PAUL R. FLETCHER, M. D.,

St. Louis.

OBITER DICTA FROM FOREIGN JOURNALS.

THE BRAIN AND ITS FUNCTIONS.

"When we consider the different organs of the body," says H. Beaunis in a highly interesting article, "Comment Fonctionne Mon Cerveau" in *Revue Philosophique* for January, "we see that their functions are identical in all persons. The muscular contraction, the secretions, the circulation, operate in the same fashion and the differences which occur are really not fundamental but are differences in degree rather than differences in kind. Motor and sensory nerves, reflex phenomena, automatic and instinctive acts are the same; uniformity is the rule. On the other hand, this does not hold in regard to the functions of the brain and the properly-called psychic phenomena, since individual differences present such digressions that they completely disconcert the physiologist and the psychologist. Between the muscular contraction in a working-man and a like occurrence in a genius, such as Taine was, there is no essential difference, but how abysmal is the cleft when we compare their respective mentalities!" The study of individual differences in cerebral functions has, up to the present, taken up only certain exceptional categories, such as mathematical prodigies and checker players; the remarkable works of A. Binet on these subjects being our best authorities. But in respect of ordinary cerebral functions we are less advanced. This is not due to any lack of books and treatises on psychology, for philosophers have analyzed the mechanism of thought with quite a degree of success. Nor is it the intention of M. Beaunis to depreciate efforts which have for their authors some of the greatest minds, from Aristotle to Herbert Spencer; but it seems to him that in all these researches too much attention has been paid to theories, and that the introspection is accompanied almost always by judgments *a priori*, so that there is never what might be called pure observation. The perusal of the contents of the greater part of these works on psychology suffices to enlighten us on this point; one example in particular, the introductory chapter of Part II in Herbert Spencer's "Principles of Psychology"—The Substance of Mind—being an excellent illustration. M. Beaunis believes that there is another method of approaching the subject and that before essaying conclusions, it is necessary at first to amass materials for them; in other words, to observe subjectively the mental phenomena and thus constitute a series of individualistic monographs which may be of help later on as a means of illumination for a rational psychology. Such psychological monographs are extant to-day only in embryo in the confessions of a number of great writers ("The Confessions of Saint Augustine," "The Confessions of Rousseau"); in certain memoirs, such as the "Memoirs of Berlioz," for example, and in the interesting monographs of Stricker, Eggeve and many other psychologists. And here M. Beaunis mentions that at the Congress of Psychology, held at London in 1892, he essayed to describe a program embracing the study of psychological autobiography. Before entering into a discussion of the subject some preliminary remarks should be made, for while they may not be new they are nevertheless necessary so as to fix the terms of the problem. The rupture with metaphysics trans-

formed psychology. The attempts of the greatest geniuses to build up, by introspection alone, a scientific psychology resulted in failure. Only after the psychological methods and procedures of Weber, Fechner, and their successors were utilized, were there indications that psychology was an established something. Psychophysics and psychometry, in spite of attempts on the part of some scientists to discredit them, constitute always a solid basis and are reliable adjuncts to psychology. The researches in hypnotism and suggestion give us an additional means for studying mental phenomena, and the rôle of "the unconscious" in the matter of cerebration is revealed to us more and more in all its strength. It is, however, in the mental domain that these methods should be studied. Is this study possible? M. Beaunis is not greatly enamored of the method of introspection, but when there are no other means at hand, he says recourse should be had to it. Although introspection, without counterpoise, without any other guide than the individual conscience, and employed by minds which are strangers to physiology and to rigorous habits of observation, is dangerous and subject to error, it can, nevertheless, become useful and legitimate when it is guided, sustained and limited by a rigorous physiological discipline and employed by a mind habituated to observation and physiological experimentation. M. Beaunis adds that as regards this sort of research there are two dangers to be avoided. The first danger is autosuggestion. It is essential that he who desires to devote himself to introspection should familiarize himself with the phenomena and also with the practices of hypnotism, and with those of suggestion, so as to eliminate any tendency to autosuggestion. The second danger is a metaphysical tendency, the turn of the mind of the seeker who desires above all else an explanation of everything, an interpretation of everything; on account of which preconceived ideas, the *a priori* way of thinking prevents him from seeing things as they really are. It is not so easy as one imagines to keep within bounds whilst proving a phenomenon. All of us, in spite of ourselves, have a tendency to distort the facts which come under our observation, to adapt them to our ideas, to our mental habits, to our manner of regarding things. Very rare, indeed, is the observation that is completely divorced from mental bias. The doctor who questions a patient, knows only too well how difficult it is to make him say exactly what he feels and not what he does not feel. Take ten witnesses of the same deed, each a person of character above reproach, and no two will describe it in the same way. To return to the comparison made before, let us ask the question: How does a working-man's brain work? and, How does the brain of a genius, such as Taine was, work? Taine might have been able to answer the question, but could a working-man? To ask him to observe himself, to demand of him to take note of what really occurred during his simplest mental operations, would be time wasted. He would not comprehend you at all and the most elementary investigations in psychometry: the exploration of the sensibility of the skin by Weber's compass, for example, if applied to him, would be decidedly uncertain and so lacking in precision that the results would be far from satisfactory. Moreover, with intelligent people and even with students of medicine, it is often difficult to arrive at positive results following like investigations. With subjects more gifted,—writers, *littérateurs*, dramatic authors,—attempts at introspection do not appear to yield better results. It is strange to see what repugnance, arising from ignorance, is evident when the subject of psychological research is broached; even the simplest terms cause a sort of comic fright which appears to result from instinctive fear. It

would be well to cite here the interesting studies in psychology by Binet and Passy (*Année psychologique*, Vol. I, p. 101) in connection with dramatic authors. "He appeared," say the authors in speaking of one of the leading dramatists of the day, "quite astonished at the questions that were asked. As to his manner of work, the mechanism of his imagination, he could give but scant information since he had never thought of studying himself, of analyzing himself; it had never occurred to him that he might present to the psychologist an interesting problem as a man of letters." And further on (p. 114) we read, "a large number of authors are absolutely devoid of the psychologic sense; they do not know how to study it within themselves; in fact, this special faculty is almost *nil* in comparison with their unusual mental gifts." Here is a fact curious enough to be arresting. The very writers who spend their lives studying the eccentricities, the oddities, the vices of their contemporaries so that verisimilitude may be lent their dramatic creations, are just those who have never even thought of observing similar occurrences in themselves. Who can deny that in this respect there is enough material at hand from which many interesting conclusions may be drawn!

In fact, to practice with good results the dictum "Know thyself," and to study one's own mental state, a preliminary education and considerable training, derived from a deep study of physiology, medicine and physiological psychology, are necessary. Above all there should be a complete separation of all preconceived ideas from the researches; bias should be relegated, and theories and systems tabooed. All that is necessary is to limit oneself to rigorous observation of facts by eliminating tentative application; in a word, remain, so to say, a simple cinematographic register for mental facts. This study has engaged the attention of M. Beaunis for some time. At the Congress of Psychology, held at Rome in 1905, he read a paper "*La Nuit psychique; une forme rudimentaire de la pensée*" (The Psychic Night; a Rudimentary Form of Thought), which at the time attracted considerable notice.



The sham operation.

HISTORICAL NOTES.

THE SHAM OPERATION.

If the many pictures depicting medical subjects by the Dutch masters are taken as a criterion of what medicine really was in the seventeenth century, we, the inheritors of that century's savants, ought not hark back to that period, when we wish to prate to those outside the profession, of the past glories of the art of healing. For according to Jan Steen's pictorial representations—and he, by the way, of all the "Little Dutch Masters" was the progenitor of the largest number of paintings depicting medical subjects,—we learn how utterly deficient was medicine at that time of all those adjuncts, namely, correct diagnosis, proper therapeutics and scientific surgical treatment, which modern physicians prize so highly, and without which we fear medicine to-day would not be the science it is. Of course due allowance must be made for the vivid imagination of so talented a painter of daily scenes as was Jan Steen, but even when this is deducted from his pictorial transcriptions, there remain enough indications of their truthfulness as exact reflections of what he often saw, that they cannot be considered other than excellent pages, from which enlightenment as to the status of medicine may be drawn. Whether or not the picture we print is a caricature or an unexaggerated presentment of an actual occurrence, is not matter of much importance for discussion; for that which is its strongest appeal, is the showing of an operation which must have been in vogue with the quacks for the sham cure of idiocy. What this special operation consisted of we do not know, but that it must have been in line with all those other remarkable surgical endeavors of the quacks of the seventeenth century cannot be doubted. And all interferences in this period, which might be called the obscure dawn of surgery, be it said, revolved monotonously around the pivot of bloodletting.

In one respect Steen resembled Molière, in that he often introduced in his pictures, scenes in which the doctor is the hero. He must have known the distinctive characteristics of the quack well, for in all the medical pictures he is depicted as pompous, dressed in sombre garb, with peaked hat, and carrying a gold-headed cane. And though there is an Hogarthian touch of coarseness in these pictures, as well as in his others, this objection is counteracted by so many touches in behalf of the truth, that even to-day these portraits must interest all those qualified physicians who have a pet aversion for the quack. When we study the faces in this master's scenes in the life of the seventeenth century quacks, and then regard with care the cast of countenance as it is evidenced in the modern successors of his medical "disreputables," we note no changes, for the same smirk, the same factitious debonair manner, is to be seen. All of which indicates that Jan Steen had an eye for the durable, and that when he placed these faces on his canvas, he knew how secure they were from the mutations of time, since no evolutionary law can alter their ignobleness.

BOOK REVIEWS.

ANATOMY, DESCRIPTIVE AND SURGICAL. By Henry Gray, F. R. S., late lecturer on Anatomy at St. George's Hospital, London. New American edition, enlarged and thoroughly revised, by J. Chalmers Da Costa, M. D., Professor of Surgery and Clinical Surgery, and Edward Anthony Spitzka, M. D., Professor of Anatomy in the Jefferson Medical College of Philadelphia. Imperial octavo, 1625 pages, with 1149 large and elaborate engravings. Price, with illustrations in colors, cloth, \$6.00 net; leather, \$7.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1908.

There is a general familiarity with this volume that makes it a reference book of more than ordinary value, and in this latest edition is the same wealth of detail in a clear text that has left the anatomic imprint on many generations of students. All of which it is hardly necessary to mention since this text-book is one of the older standards in the modern English medical world.

In the sections on the nervous system the subject has been largely rewritten to conform to the latest knowledge and theories, and this subject, usually the most difficult for the student, is covered in a way so clear and complete that it is amongst the best expositions we know. There are numerous new illustrations, many of them original and of a very high order, and it is gratifying to find the excellent selection, particularly of the schematic cuts which to a student are most indelible. This portion of the work is by Spitzka.

Otherwise the general anatomic descriptions are about as in previous recent editions. Da Costa has shown his force in the largely remodeled and greatly augmented section on practical and surgical anatomy. These paragraphs have always been of the most instructive character.

DISEASES OF THE NERVOUS SYSTEM. By Alfred Gordon, A. M., M. D. (Paris). P. Blakiston's Son & Co., Philadelphia, 1908.

This book attempts to set down in a brief way the facts that are known concerning diseases of the nervous system. It is designed, as the author indicates in his introduction, for the general practitioner and the medical student. By the use of heavy type to accentuate important words, the author proposes to emphasize what he considers the chief facts he undertakes to deal out. This, it may be said in the beginning, accounts for the unusual appearance of the text. That this popular typography adds neither beauty nor utility to the subject-matter is self-understood. There is nothing in the book which accounts for the phenomenon of its appearance in the literature of neurology. There is no need for such a book as this in any literature. One looks in vain for a novel point of view, or a new way of stating old and well-known facts, and for some indication that the author, in writing this text-book, had something to say and knew how to say it. The only novel thing to be found is the English style, specimens of which could be quoted ad nauseum. The total disregard shown by the author for the elements of clear expressions, to say nothing of his use in English and the absolute indifference with which he regards the rules of English narrative style is criticism enough to condemn the book. The illustrations are borrowed or copied with few exceptions; those that are original with the author are decidedly inferior to the old traditional figures, grown old with continued use in many text-books. The only neurological authorities which are quoted are the authors and occasionally Charcot. There is no reason why this book should be printed; it is decidedly inferior to the ordinary quiz-compends; it is about twice as large and accentuates twice as much their defects. The general practitioner and student, its avowed victims, deserve commiseration; that is, if either of them is unwise enough to read or buy the book. It can be said without any prejudice that it is the worst thing in the neurological line that has come out of a city whose neurological traditions are a matter of pride not only to its own neurologists but to those in distant cities. A book like this makes it possible to establish the long-awaited society for the protection of innocent and unoffending neurologists. The general practitioner and the student to whom books of this kind are addressed would be admitted as junior members.

THE PRINCIPLES OF PATHOLOGY. Volume I. General Pathology. By J. George Adami, M. A., M. D., LL.D., F. R. S., Professor of Pathology in McGill University, Montreal. Octavo, 948 pages, with 322 engravings and 16 plates. Cloth, \$6.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1908.

Adami's book admirably demonstrates the certainty that pathology will become a branch of science, not only of medical science, but also in the whole domain of so-called biologic investigations. The title of "Principles of Pathology," is well adapted to the trend of the author's representation of the subject. It conveys the thought that the stress is not laid on pathologic changes as such, but in their relation to the whole organism. In single problems this method has been followed in a number of publications and to extend it to the whole of pathology is the great merit of Adami. Naturally the inequality between the number of questions that have been answered and those that are as yet unanswered is greatly in favor of the latter. It is necessary, therefore, that the single subjects represented by the same author all have the same character when dealing with them, just as in Herbert Spencer's many volumes, the first of which will say what the others will contain as to interpretation and significance of the problems. Nevertheless the single subjects are dealt with in a way that has consideration of their specialty as such, and the great ingenuity of connecting them with others is astounding.

The language and style make its reading a pleasure, while impressing on the reader, and particularly the worker, the ways in which the nature of obscure and difficult phenomena can be made clear to the understanding. The book is said to be published for students and physicians. This is either modesty or a mistake of the author, for to read and be benefited by this work one needs a knowledge of the subject that students cannot be expected to possess and only specially trained physicians have. It is a book for any worker in pathology and general biology; it will elevate their appreciation of the offered opportunity to work with a wider interest in a seemingly limited range of objects. Adami's book is a classic, and with eagerness we will look for the second volume that is to contain what is usually called Special Pathology.

It will be impossible to review the special chapters of the book. The prolegomena are rather too extensive for the subject of the principles of pathology and comprise too much material that, for pathologic investigations, is either unimportant or would better appear as the introduction to such a work as Stoehr's last American edition of his Histology, a work that is based on the combination of embryologic histology with the adult histology. It is nevertheless a rather classic representation and interpretation of our knowledge of cells, their multiplication and changes. Adami considers cells as the basis in dealing with pathology and pathologic changes of cells. His treatise on inflammation may meet with objections, and also the chapter on tumors. But then in these problems opinions are so different and at the same time so inaccessible to positive evidence, that the general interpretation of Adami's book will range evenly with the others. As to the able discussion of the immunity problems, Adami forgets that Ehrlich called his theory only heuristic. It has proved to be this to the widest extent, and I am glad to see Adami agree in this point. The point that he does not emphasize is the absolute specificity and the exact chemical proportionality of the reactions. The similarity to fermentreactions is suggestive, but we do not know enough of ferments to handle them quantitatively like so many immune bodies. Maybe this will be done in the future, but this will only change the name and not the theory.

The chapter on death is so full of original ideas and suggestions that it would be worth while to review it at length. This may be done later on in a special review. Here only the opinion is to be expressed that Adami's Principles of Pathology is and will remain for a long time a guide for dealing with pathology as a real science, important for the knowledge of the biologic character of the processes going on in diseases and in disturbances of the normal equilibrium.

VACCINE THERAPY AND OPSONIC METHOD OF TREATMENT. A Short Compendium for General Practitioners, Students and Others. By R. W. Allen, M. D., B. S. (Lond.). Second Edition. Philadelphia: P. Blakiston's Sons & Co., 1912 Walnut St. 1908. Price, \$2.00.

The production of personal active immunity by the inoculation of the attenuated bacteria or their products as a specific means of therapy has progressed so rapidly as to necessitate the collection and correlation of the literature

on this subject in book form. The author has produced in this revision of his previous publication a compact review embracing the more established and effective methods of this therapy. Detailed considerations are given to the definition, nature and source of opsonins, the determination of the opsonic index, the index in health and disease, and its value in diagnosis, prognosis and treatment. The principles involved in vaccine therapy and the preparation of different vaccines are so clearly and concisely described so as to place them within the grasp of all those who desire to do practical work in this field. The technique of diagnosis, prognosis and treatment in infections from tubercle bacilli, pyogenic bacteria, pneumococcus, gonococcus, colon, typhoid and dysentery, are given special chapters. Vaccine therapy of tatarrh, nasal and tracheal, of the accessory air sinuses, and the vaccine therapy of eye diseases, are reviewed at length and in a way which demonstrates positive advancement in the treatment of infections of these organs. Some new ideas regarding the combination of tuberculins and the specific indications for the use of certain tuberculins in the treatment of tuberculosis, are among the most striking features in this edition.

A MANUAL OF THE PRACTICE OF MEDICINE. Prepared especially for Students. By A. A. Stevens, A. M., M. D., Professor of Therapeutics and Clinical Medicine in the Woman's Medical College of Pennsylvania, etc. Eighth Edition. Revised. Illustrated. W. B. Saunders Company, Philadelphia and London.

The previous editions have been thoroughly revised and new material introduced, bringing the contents up to date; many sections have been completely rewritten. As an outline of the practice of medicine, the work is adapted to students, as it presents in a clear, accurate and concise manner, the essential facts of the practice of medicine.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By James M. Anders, M. D., Ph.D., LL.D., Professor of Medicine and Clinical Medicine at the Medico-Chirurgical College; Physician to the Medico-Chirurgical Hospital, etc. Illustrated. Eighth Edition, thoroughly revised. W. B. Saunders Company, Philadelphia and London.

This edition is critically revised and adjusted to the most recent, positive knowledge of medicine. The commendable features of the previous editions have been little changed. Chapters on animal parasites have been entirely rearranged and grouped together. The important developments, especially in the diseases of the blood, Stokes-Adams disease, Vincent's Angina, Atypical Pneumonia and Appendicitis, Internal Intoxication and Senile Dementia, are discussed in the light of recent investigations. This standard work meets every requirement of teacher, student and general practitioner; it possesses an advantage over most of authoritative text-books in the exhaustive consideration of diagnosis and differential diagnosis.

A TEXT-BOOK OF PHARMACOLOGY AND SOME ALLIED SCIENCES (Therapeutics, Materia Medica, Pharmacy, Prescription-Writing, Toxicology, etc.). By Torald Sollman, M. D., Assistant Professor of Pharmacology and Materia Medica in the Medical Department of Western Reserve University, Cleveland, Ohio. Illustrated. W. B. Saunders Company, Philadelphia and London.

This well-known text-book has maintained the excellency which was conceded from its first publication. It thoroughly covers the entire field of Pharmacology and Materia Medica. The special attainments for which this work is noted, are the detail and satisfactory conclusions drawn from experimental use of drugs, and the grouping of therapeutical agents according to their physiological indications. From the former, many of the disputed questions regarding the action of drugs have been entirely established, and the latter relieves the severe burden of memorizing, which is such a drawback in the usual test of materia medica.

A TEXT-BOOK OF HUMAN PHYSIOLOGY. THEORETIC AND PRACTICAL. By George V. N. Dearborn, A. M. (Harv.), Ph.D. (Col.), Professor of Physiology in the Medical and Dental Schools of Tufts College, Boston; Professor of Relations of Body and Mind in the Sargent School for Physical Education, Cambridge, etc. Illustrated with 300 engravings and 9 plates. Lea & Febiger, Philadelphia and New York. 1908.

This book was written primarily for medical and dental practitioners and students. It emphasizes the mechanism of sense-organs, nerves and muscles

as the basis of the individual's efficiency; and it is the first text-book of medical physiology to recognize the more and more insistent demands of the mental process. For these reasons it is especially adapted to the needs of students and teachers of physical education and of physiology.

A DICTIONARY OF MEDICAL TREATMENT. FOR STUDENTS AND JUNIOR PRACTITIONERS. By Arthur Latham, M. A. Cantab., F. R. C. P., Lond., Physician and Lecturer on Medicine at St. George's Hospital; Senior Assistant Physician to the Brompton Hospital for Consumption and Diseases of the Chest, etc. Philadelphia: P. Blakiston's Son & Company. 1908. Price, \$2.00.

The intention of this little book is to give to students and junior practitioners a definite course of the established treatment of any one disease. Although it does not give detailed treatment, it presents concise ideas of the procedure in the majority of cases in question. Besides the general method of treatment to be adopted, special methods which the author has considered of value, are included. For instance, such remedies as the Schott-Nauheim and Frankel's Exercises. Artificial feeding of infants and vaccine therapy have been given brief consideration.

THERAPEUTICS OF THE CIRCULATION. Eight lectures delivered in the Spring of 1905 in the Physiological Laboratory of the University of London. By Lauder Brunton, Kt., M. D., etc. Published under the auspices of the University of London. 280 pages, with 240 illustrations. Philadelphia: P. Blakiston's Son & Co. 1908. Price, \$1.50 net.

Sir Lauder Brunton never writes on any subject without illuminating it. In this course of lectures the genial author first describes the physiology and pathology of the circulation and then takes up, one by one, the various conditions in which the circulation is impaired, discussing their etiology and symptomatology and treatment. The whole volume is written in a charming style, full of entertaining anecdotes and practical suggestions. It will well repay perusal. A most elaborate index adds greatly to the value of the book.

INTERNATIONAL CLINICS. Volume III. Eighteenth Series, 1908. Published by J. B. Lippincott Company, Philadelphia and London.

This volume contains a number of interesting clinical articles, among which, of special notice, are the following: Sciatica: Its Nature and Treatment, by Sir Dyce Duckworth, M. D., LL.D., F. R. C. P.; Perforation of the Intestine in Typhoid Fever, by J. A. Scott, M. D.; On the Value of Oesophagoscopy from the Point of Diagnosis and Therapeutics, by M. Guisez, M. D.; Considerations as to the Nature of Hysteria with their Application to the Treatment of a Case, by Dr. Tom A. Williams; The Cytological Examination of a Case Diagnosed Clinically Malignant Disease of the Liver and the Spleen, by John M. Swan, M. D.; Melanotic Neoplasms, by John H. Gibbon, M. D., and Duncan L. Despard, M. D.; The Modern Treatment of Fractures by Means of Direct Internal Splintage, by Eldred M. Corner, M. C. (Cantab.), F. R. C. S. (Eng.); Adenoma of the Thyroid Gland, by George P. Muller, M. D.; Pericolic Inflammation, by H. S. Clogg, M. S. (Lond.), F. R. C. S. (Eng.); Cleft Palate and Hairlip, by F. N. G. Starr, M. B. (Tor.); Myositis Ossificans Progressiva, by Warren Walker, M. D.

CONSUMPTION. HOW TO PREVENT IT AND HOW TO LIVE WITH IT. Its Nature, Its Causes, Its Prevention, and the Mode of Life, Climate and Exercise, Food, Clothing Necessary for its Cure. By N. S. Davis, A. M., M. D., Professor of Principles and Practice of Medicine, Northwestern University Medical School, etc. Second Edition, thoroughly revised. F. A. Davis Company, Publishers. 1908.

This little book was written for the purpose of educating the public on the subject of Pulmonary Tuberculosis. It deals in very simple and clear style with the nature of consumption, how to prevent infection during exposure, natural and artificial means of prevention, the hygienic sanatorium and medicinal treatment of consumption and the possibilities of a cure. This presentation of these subjects, although based upon the present scientific facts, is within the comprehension of laity. The optimistic view expressed throughout the volume regarding this dreaded disease, should have a powerful influence upon contrary ideas held by the ordinary layman. It is an able production of a scientific subject freed from the confusion of technical terms. For the consumptive whose absolute understanding of the patience and detailed treatment required for a good result, no better book could be recommended.

For all those interested in the present campaign against tuberculosis this book should serve as a handy guide, and for the laity it is the most lucid exposition on the subject to be obtained.

THE DIAGNOSIS AND TREATMENT OF PULMONARY TUBERCULOSIS. By Francis M. Pottenger, A. M., M. D. 377 pages, illustrated. New York: William Wood & Company. 1908.

For several years Dr. Pottenger has been one of the foremost exponents in this country of the specific treatment of tuberculosis and expectations that are aroused on opening this book will not be disappointed. The pathology, diagnosis and hygienic treatment of tuberculosis are clearly and exhaustively described, but the most valuable portion of the book unquestionably lies in the discussion of the tuberculin therapy. Dr. Pottenger is a convinced advocate of the value of this method of treatment in nearly all cases of tuberculosis. All methods of treatment in this disease depend for their success upon the production of a greater or less degree of immunity, but none accomplishes this result so directly or certainly as injections of tuberculin, always aided, of course, by all other proper measures, hygienic, dietetic, hydrotherapeutic and occasionally medicinal. It is applicable to nearly all stages of the disease, early cases being cured and advanced ones benefited. The surgical treatment of tuberculous lesions will have a field more and more limited as the proper use of tuberculin becomes more wide-spread. Tuberculin is, however, a two-edged sword and a correct dosage and technique is indispensable if more harm than good is not to result from its use. Nowhere will the reader find a clearer or more complete presentation of the value and method of tuberculin therapy than in this book.

GENERAL PATHOLOGY. By Dr. Ernst Ziegler. Translated from the 11th revised German edition (1905). Edited and brought up to date by Alfred Scott Warthin. New York: William Wood & Co. 1908. Price, \$5.50.

Ziegler died in 1905 after finishing the eleventh edition of his widely known text-book. In this edition the character of the book is greatly improved and brought up to date. The informative importance of Ziegler's book is so well known that it need not be emphasized here. For students and workers in the line of pathology the book is one of the best to serve as a guide and as a reference. It is needless to insist on the value of a book written by Ziegler, and brought up to the progress made since his death by a conscientious translator, himself an experienced pathologist. The book must be highly recommended for instruction and reference in pathologic questions.

FOURTH ANNUAL REPORT OF THE HENRY PHIPPS INSTITUTE FOR THE STUDY, TREATMENT AND PREVENTION OF TUBERCULOSIS. Edited by Joseph Walsh, Henry Phipps Institute, Philadelphia. 1908.

This report is another evidence of the earnestness with which the task that the Phipps Institute has taken upon itself is carried out. The contributions contained in the report comprise features of the greatest importance for a real understanding and scientific management of tuberculosis. The paper by Walsh on the comparison of the pathological findings with the clinical signs in a number of cases, is greatly instructive and gives an insight into the method to correctly interpret clinical phenomena. The Phipps Institute is the only one in our country that performs its work methodically, except the work done under Trudeau's direction, and its reports are of greater value for the fight against tuberculosis than the great bulk of literature yearly accumulating.

PRINCIPLES AND PRACTICE OF PHYSICAL DIAGNOSIS. By John C. DaCosta, Jr., M. D. With 212 Original Illustrations. Philadelphia and London. W. B. Saunders Co. 1908. Price, cloth, \$3.50 net.

In view of the flood of publications devoted to the laboratory aspect of clinical medicine, a compendious volume covering the field of physical diagnosis is doubly welcome. While recent discoveries have affected the latter field less than the former, sufficient new work has been done of late in the realm of physical diagnosis to justify a fresh presentation of the subject. After a chapter on technique, the bulk of the book is devoted to the respiratory and cardio-vascular systems, the final chapter alone being devoted to the abdomen. The nervous, muscular and osseous systems are not touched upon. Goldscheider's method of orthopercussion, which to the reviewer seems one of the most valuable of the recent contributions to physical diagnosis, is dismissed in a few lines and X-ray diagnosis hardly receives adequate treatment. The illustrations, which are numerous and excellent, form one of the most valuable features of the work.

GLANDULAR ENLARGEMENT AND OTHER DISEASES OF THE LYMPHATIC SYSTEM. By Arthur Edmunds, M. D., etc. Oxford Medical Publications. London. Henry Frowde; Hodder & Stoughton. 1908. Oxford University Press, American Branch, 35 West 32nd St., New York.

This small volume makes no pretension to be an exhaustive treatise on the diseases of the lymphatic system. Such a monograph would have to cover the entire realm of medicine and surgery, there being few diseases in which the lymphatic system does not play some part. It is rather a concise but adequate discussion of those affections, not including lymphatic leukemia, in which glandular enlargement is the essential factor. After two excellent anatomical chapters and one on diagnosis, the writer takes up the various inflammatory, parasitic and neoplastic affections involving mainly the lymphatic system. As regards therapeutics, he is on the whole an advocate of surgical measures. He expresses himself cautiously, though on the whole approvingly, in regard to vaccine treatment in suitable cases, but the reader will not always agree with him in his rather enthusiastic advocacy of X-ray treatment in inoperable glandular carcinoma.

SELECTIONS FROM THE WRITINGS, MEDICAL AND NEUROLOGICAL, OF SIR WILLIAM BROADBENT. Edited by Walter Broadbent, M. D. Oxford Medical Publications. London. Henry Frowde; Hodder & Stoughton. 1908. Oxford University Press, American Branch, 35 W. 32nd St., New York.

On first looking over the book the reader is inclined to question the good judgment of the younger Dr. Broadbent in gathering together into a portly volume the scattered contributions to periodical medical literature of his father. A more careful reading, however, quickly dissipates these misgivings. The medical literature of to-day is full of ultra and pseudo-scientific communications of a sort with which the Germans especially have made us familiar. At their best, such writings are invaluable both for their influence on the medicine of to-day and as laying a foundation for the medicine of to-morrow. Nevertheless, there is great need for more of such good, solid clinical writing of which the articles in this volume offer an example. Sir William Broadbent was a type of the good old English practitioner with keen eye, solid judgment and unflinching common sense. His observations here recorded are the result of well digested experience extending over many years. They are full of meat and as a treasure-house of clinical observations almost rival the matchless lectures of Trousseau.

PRACTICE OF MEDICINE FOR NURSES. By George Howard Hoxie, M. D., Professor of Internal Medicine, University of Kansas. With a chapter on the Technic of Nursing, by Pearl L. Laptad, Principal of the Training School for Nurses, University of Kansas. 12mo of 248 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1908. Cloth, \$1.50 net.

It is possible to question the advisability of burdening the memory of undergraduate nurses with much instruction in the etiology, symptomatology, pathology and treatment of disease. There is a growing feeling that it would be better, in training schools for nurses, to devote more time to the acquisition of a quiet, soothing personality, delicacy of touch and skill in those manipulations that are conducive to the patient's comfort and less to acquiring a smattering of universal medical knowledge. However, there are still many training schools in which the opposite view is held. To such and to nurses who desire a medical book for ready reference, this volume will prove useful.

THERAPEUTICS. Its Principles and Practice. By Horatio C. Wood, M. D., LL.D., Emeritus Professor of Materia Medica and Therapeutics in the University of Pennsylvania; Member of the National Academy of Science. Thoroughly revised and rewritten by Horatio C. Wood, Jr., M. D., Associate Professor of Pharmacology in the University of Pennsylvania, Assistant Physician to the Philadelphia General Hospital. Fourteenth Edition. Philadelphia and London: J. B. Lippincott Company.

The fourteenth edition of this well-known and authoritative text-book on therapy is an extensive revision of previous editions. Considerable alteration has been made in almost every chapter and the most recent discoveries of the rapidly advancing science of pharmacology have been included. The chapters on Cathartics and Dietetics have been entirely changed so as to conform to the latest views of physiology and pharmacology regarding these means of therapy. The opsonic index, ion theory, photographic reproduction of the blood pressure

and the respiratory curves are entirely new. It is a book adapted to the use of instruction and learning, and on account of its acute clinical therapeutics it can be recommended as a general reference book for practitioners.

TYPHOID FEVER. Its Causation, Transmission and Prevention. By George C. Whipple, Consulting Engineer; with an Introductory Essay by William T. Sedgwick, Professor of Biology, Massachusetts Institute of Technology. First Edition, first thousand. New York: John Wiley & Sons; London: Chapman & Hall, Limited. 1908. Price, \$3.00.

The fight against typhoid fever must be made largely by men of two professions,—by physicians and engineers. Differences in temperament, in training, and in the nature of their work, have prevented these two professions from cooperating as closely as they must if typhoid fever is to be relegated to the class of infrequent diseases. The doctor naturally thinks of men as individuals; he is not accustomed to think of men in masses. The sanitary engineer, with his genius for mathematics and statistics, studies communities at large and is in danger of neglecting the details of particular cases. The two professions admirably supplement each other. The engineer, by training, is best fitted to control the measures which are instrumental in warding off disease, to deal with matters of water supply, sewage disposal, etc.; while the physician is the best fitted to attack the disease in the household. The object of this book is to furnish to the members of these two professions a condensed summary of the most important facts regarding typhoid fever, so far as they relate to the prevention and spread of the disease; to furnish to the student of sanitary science a group of illustrations of some of the leading principles of epidemiology; and to give to the reader a simple, clear, and correct account of the causation, transmission and prevention of the disease, and his own responsibility in helping to bring about such conditions of cleanliness that typhoid fever shall soon cease to be a national disgrace. These objects have been attained by the author and this book should be in the hands of every doctor and all others who have to do with sanitation, whether it be local, as in the household, or general, as relating to the masses.

ESSENTIALS OF MEDICINE. A Text-Book of Medicine for Students Beginning a Medical Course, for Nurses, and for all Others Interested in the Care of the Sick. By Charles Phillips Emerson, M. D. Illustrated by the author. 383 pages. Philadelphia and London: J. B. Lippincott Co.

In this book the writer discusses elementary internal medicine in a manner suited to third year medical students and to nurses. In most text-books in medicine the beginner finds it difficult to distinguish between what is essential and what is exceptional between the main symptoms upon which a diagnosis is usually based and those that occur only occasionally. The need for a well-written elementary text-book is clear, and this need has been well filled by the author. The book is interestingly written and is clearly based upon a large personal experience, both clinical and pedagogic.

OBSTETRICS. A Text-book for the Use of Students and Practitioners. By J. Whitridge Williams, Professor of Obstetrics, Johns Hopkins University, etc., etc. Second enlarged and revised edition. With 16 plates and 666 illustrations. New York and London: D. Appleton & Co., 1908.

In this new edition Williams' Obstetrics has been thoroughly revised. The chapters dealing with the development of the ovum and the toxemias of pregnancy have been entirely rewritten and sections have been added to the chapters on metabolism of normal pregnancy, vaginal Cesarean section, pubiotomy and contractions of the pelvis. This is one of the most popular text-books on obstetrics extant.

DER KOPFSCHMERZ ALS HEUFIGE FOLGE VON NASENLEIDEN UND SEINE DIAGNOSE. Von Dr. Richard Veckenstedt. Wuerzbuerger Abhandlungen aus dem Gesamtgebiet der praktischen Medizin. Wuerzburg. Curt Kabitzsch (A. Stuber's Verlag). 1908.

The importance of the occurrence of frontal headache as a result of obstruction or empyema of the frontal or other sinuses is generally recognized. In this monograph the writer discusses the subject concisely but adequately.

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EDITORIAL.

THE CANCER PROBLEM.

Although it may be contended with considerable show of reason that the many theoretical expressions of the cancer problem belong solely to the investigators, and are not put forth to be adjudged by what scientific men are pleased to call "the common people," the thought should not be lost sight of by all those who are working on behalf of an early solution of this most intricate problem, that the public is nearer to intimations as to the possibilities of an ultimate cure than it is to those of any other problem. This may be considered fortunate or unfortunate according to the mental complexion of the philosopher who is given to moralizing on the relation of one class of men to another, but aside from what he and all of his fraternity may think of the matter, the supreme thought which recurs only too often upon reading the various articles on the cancer problem in the leading medical journals, is that if multiplicity of ideas* in this direction is further encouraged and abetted, the dignity, which should attach to so important an evolutionary stage as the correct treatment of cancer, will suffer. And the fraying of the dignity will not come from the public but from those doctors who, guided by this or that research, are too enthusiastic in their promises to patients to cover themselves in the end with enough glory to justify their course of treatment.

No subject in latter years has received so much earnest thought on the part of researchers as the subject of cancer, and it is in no spirit of petty caviling that we assume the position of judge of all the excellent work that has come out of the laboratories. That the work is fraught with enough earnestness to warrant all the enthusiasm the whole medical profession brings to bear upon it, speaks not only for the

*Gazette des Hopitaux, Jan. 14, 1909. Traitement de l'Epithélioma de la peau et des muqueuses dermo-papillaires par les applications de radium par le professeur Gaucher.—Gazette médicale de Paris, March 1, 1909. Cytolyse alt-ofréquente du Cancer par le docteur Mazery.—Medical Record, March 20, 1909, London Letter: Opinions of Mr. Gould, Senior Surgeon of the Middlesex Hospital, and of Mr. Jessett, of the Cancer Hospital.

excellence of its quality, but shows that enviable *corps d'esprit* between general practitioners and researchers, without which many dissensions, with their disintegration and vitiation of high purposes, would surely obtain. But though this may be to good purpose, inasmuch as the deep interest manifested by all practitioners in the scientific undertakings of the best laboratories can be but the right goad to more and more masterly endeavors, there is another phase to the matter that must engage the attention of all who have watched with misgivings the genuflexions of comparatively sane practitioners before every new medical Baal, who has been long enough cheek-by-jowl with a number of researchers of excellent reputation to assume the air of knowing his subject thoroughly, when he puts his thoughts on paper, though he may not have done much laboratory work himself. And these thoughts, just because they concern themselves less with the theory and more with the treatment, are eagerly absorbed by the reader, forgetful, whilst deeply impressed, that the published statistics may be the outcome of an ill-conditioned mind whose ethical character is not proof against exaggeration. Statistics, be it emphasized here, have become such unsatisfactory and monotonously repetitious occurrences in many articles, even in our best journals, that for any one to bolster his own failures by citations from a recently read article which reeks with statistics and makes much of this virtue, indicates a form of mental development that bodes no good for the scientific advance of medicine, or the continued confidence of the public in its triumphal march to ultimate success.

That such carelessness as has been indicated above is allowed free play—carelessness but mildly expresses the whorl of the many-sided ideas which the ingenuity of editors encourages in various first-class journals—is not so new or recent a matter that we should rage furiously against its isolated manifestations; but when a journal of the worth of the *British Medical Journal** publishes in one number a series of articles on cancer that have so sequence but are completely disconnected, since the contradictions as to treatment are the outstanding quality of each effusion, we are forced to confess that the language of science and reason has been sufficiently travestied to make the unheeding and unthinking doctor fully capable of experimenting, even to the greatest lengths, on the very first patient who presents himself. Of course we do not wish to convey the idea that no possible good can be derived from a careful perusal of the papers, but even though a slight gain may be made in this

*March 6, 1909.—Some Clinical Facts Regarding Mammary Cancer, by Sir Hector C. Cameron.—The Natural Cure of Cancer, by W. Sampson Handley.—The Treatment of Cancer by the Use of Potassium Bichromate, by James Fenwick.—The Therapeutic Applications of Radium, by James MacKensie Davidson.—The Methods of Filtration and "Crossed-Fire." Paris Correspondence.

direction, in other respects there can be nothing but a muddling of many minds. And born of these befogged mental states is not what one would most desire, that is,—a complete abeyance of experimentation in the sick-room or clinic until such time as the researchers shall place the seal of their approval on endeavors so that they may dwell in the province of facts; but an unquenchable eagerness to imitate in cases, where a far-seeing mind would know at once that anticipatory feelings of high elation, when not resulting in benefit to a patient, can only work in a manner greatly to be undesired. By this manner of procedure, with failure written only too often in large, glaring letters, a wide-spread scepticism is created which, by its growing strength, belittles even the earnest and really scientific methods of treatment and opens the door at full width for the quack or the practitioner of the pseudo sciences.

The thought, then, which should be uppermost in our minds when this mightiest of all medical problems is discussed, either by doctors or by intelligent laymen, is the important one that the applicability of a certain treatment leading to success is most limited. For the character of the cancerous growth is a point which should never be overlooked, and by this we mean much more than is generally appreciated by quite intelligent physicians. The gropings towards that great light which shall illuminate us where now all is darkness, are important enough to arrest our attention and should not be decried, though, at times, the progress is quite discouraging; but when we mete out to them their just measure of praise we have done all that in our power lies, and to cry aloud for a full recognition, when circumstances declare against such blatancy, is about as unbecoming as when "quack outbellows quack." Charles Lamb, speaking in a disparaging way of Sir Isaac Newton, once said that he was "a fellow who believed nothing unless it was as clear as the three sides of a triangle," and though much might be said against the stubborn front of "that sort of fellow," he nevertheless represents an element that makes much of truth. And when envisaging so complicated a subject as the cancer problem, an unreceptive spirit, persistently doubtful, is a much saner quality to possess than a rampant enthusiasm that follows in the wake of the most visionary promises.

ANTIVIVISECTION.

The message of scientific evolution as it comes to the world of intelligent men from its concealment in physiological and pathological laboratories, is one that has always been endowed with those qualities which only the foolish fail to appreciate and are prone to regard with contempt. Medicine to-day could not be the exalted science it is without its scientific

furtherance at the hands of researchers whose one thought is the amelioration of disease. Their thought is hardly an ignoble one since it makes for a higher phase of humanitarianism than is understood by the many philosophers who glibly talk of advancement on lines which shall show to an indifferent world, the worth and power of a philosophy that spells the possible prevention of suffering in others. But though there has been a deal said of late as to what should really constitute the prime facts of humanitarianism, so as to effect a more extensive recognition of its benign principles, the narrowness of some of its most ardent advocates is such, that the broad-gauged purpose of the herculean labors in our laboratories is held up to the perversely emotional elements in Anglo-Saxon communities, as an illustration of the grossest materialism.

When any movement on behalf of the betterment of human conditions involves the destruction of an insanitary series of buildings, or the sacrifice of a number of dumb animals, the Puritanic mind, true to its traditions, is aroused from its usual lassitude and manifests an unwonted activity. Then the cry abroad is that all spirituality is being driven out of life and that, in its stead, is pushed into prominence a materialism that deserves immediate commination. This sort of reasoning is founded on the much-to-be-applauded idea, that no progress, unless it is founded on what may be conceived in the most arbitrary way so that interference is its prime virtue, should be encouraged. Revolutionary measures must be suppressed at once, or otherwise there might be a repetition of the farce enacted during the French Revolution, when Mdle. Candeille personated the Goddess of Reason for the edification of the *sans-culottes*. Even evolutionary progress is not to be too enthusiastically greeted, for though tolerance of the teachings of Darwin can no longer be withheld, there is the advanced stage of the Englishman's theories in the biological studies of Ernest Haeckel; and surely they are not for a world that rightfully believes in the consoling beauties of a poetic conception of life. What was Claude Bernard but an ill-guided wretch, who knew but imperfectly the purposes of life, and left a record that benefited no one, not even his enthusiastic followers who blindly imitated him, only to find out too late that physiological experimentation had a hollow ring. As for the Kochs, the Pasteurs, and the Metchnikoffs, they but symbolize so many stumbling-blocks to the right sort of exaltation, on account of a wholesale destruction of animals which are considered worthless because an unintelligent part of the community, in its ignorance, has not fathomed the mysteries of creation in connection with the souls of speechless animals! Now, can materialism go any further, and must it not be patent to all, that though the Germanic and Latin races may encourage physiological experimentation, not only in the present evolutionary stages of their medical science but

also in their literature, of which there are dire illustrations in Renan, Zola and Ibsen, no right-thinking Anglo-Saxon should countenance a movement that must surely mean the worst exhibition of materialism the world has ever seen.

The study of the Anglo-Saxon mind, especially after it has been tried by the best tenets of Puritanism, is a peculiarly interesting one. Its insistence to interfere, where interference can do the greatest harm to the community, is not its least quality. Its love of cant is proverbial; and its abnormal desire for notoriety when there is an infringement of its parochial ideas by the introduction of new tendencies to vanquish faults that smite the intelligent, is not without mention in history. It is stubborn of its own rights,—not a bad course to pursue, by the way,—but its great sin of commission is its hypocrisy in the face of the sort of progress which might mean untold blessings for thousands of suffering men and women and children; in fact, it makes of this outstanding quality altogether too much when it fulminates before an appreciative gallery. But at no time are its ebullitions so intense as when it discusses the huge sacrifices of animal life, which are daily being made in the mistaken interests of vivisection. Then the historic Bull of Bashan must needs look to his laurels!

To mention all the benefits which have accrued to mankind through experimentation in physiological and pathological laboratories would be a wearisome tale, and since our purport was not to plead before the bar of justice for acknowledgment of the rights of the experimenter, it is also an unnecessary one. What we wished to indicate, and what we hope we have in part succeeded in doing, was to show that with us the world moves slowly. We talk a deal about huge strides taken on behalf of the physical welfare of mankind; about the furious passion which besets us when the supposed efficacy of medicines is as nothing before the mighty sweep of some epidemic; about the futility of the old methods as a means of preserving health or prolonging life. But though our voices are high and strident when we view how much must be done before what are now thought to be incurable diseases become curable, the wee whimpering of an animal in a laboratory is thought to be enough of a crime against modern civilization, to turn the hand of medical progress back to the peaceful and quiescent period when animals were saved at the expense of the lives of thousands of human beings.

MEDICAL INSTRUCTION IN PRIMARY SCHOOLS.

The efforts on the part of school authorities to make compulsory a course in medical instruction, thereby changing what should be a sane message to the growing child into a burlesque of proportions large

enough to appeal to every medical man with any sense of humor, is described in detail by Dr. Good, of La Motte-Saint Héraye, in a letter published in a recent number of the *Concours médical*. According to Dr. Good, his daughter, aged 15, who is about to take her examination in an upper primary school, has been most diligent in learning certain things about medicine from a book entitled "What One Ought to Know," by one Mme. Sage, which, despite its extraordinary nature or perhaps on account of it, is at this writing in its second edition. What these certain things are have until now been a closed book to the French Academy of Medicine, but with the publication of Dr. Good's letter there can be no further excuse for that body of distinguished men to remain unenlightened, as to some of the obscurities its own deliberations have failed to clear up in the many meetings which the medical world has always considered one of the best assets to medical knowledge.

Mme. Sage has small respect for doctors, for on page 217 she expresses herself on this much-abused subject with a valor and originality which show that, even though she drank deep of the medical Pierian spring before putting her book together—else how could there have been produced so rare an evocation—the disciples of the art of medicine are not to her liking, for "the terms employed by doctors are sometimes strange, because if there is one thing these men like to do it is to use peculiar expressions to attract attention. For instance, instead of calling a footbath by its simple name they persist in calling it *pediluvium* and the word "lard" is converted by them into *axungia*. Really the modern doctor ought to drop the manner of the quack and speak a language that every one knows." Later on we are told that "doctors make it their object to have their prescriptions written in such a way that they are most difficult to decipher. A doctor who would write a legible hand would lose considerable in prestige. Surely all this belongs to a less enlightened age." Having seen and, prompted by curiosity, examined at close range quite a number of specimens of handwriting as they have come to our desk from all shades of doctors, we cannot but agree with Mme. Sage that illegibility is either peculiar to, or affected by the doctors; but though this be true it hardly amounts to a special indictment, since in these parlous times very few, if any, men who write a deal are afflicted with a desire to rival the legibility of the Spencerian penmanship.

Now though what is said about doctors is really the wrong instruction for the growing mind, inasmuch as youth should not be disillusioned as to their good qualities, no matter whether, with the crustiness of old age, there comes a time when doctors are judged with extreme harshness, it is as nothing compared with the medical advice which is scattered broadcast throughout the pages. With a delicacy which no doctor could pos-

sibly affect, the young girl between the age of 15 and 16 is told that "the expulsion of waste liquid matters should take place directly the desire is felt as any delay might rob the muscles of contraction of their sensibility"! Not only is such clever advice as this given but there are many paragraphs on pneumonia, typhoid fever, cholera, puerperal fever, and cancer; and finally there is stated the following new interpretation of the reasons for the increase in nocturnal itching in scabies: "The reason why this untoward sensation takes place at night is because the acarus lies dormant in the daytime so that its full strength is conserved for what it does during the night." Such rare intelligence on the part of the acarus should not be without interest to the medical world! But if the disturbing cause of the inconveniences of scabies receives due mention, the subject is by no means a favorite one with the writer, for her talents lie in other directions—in those which are so closely wrapped up with modernity that it would be but a poor showing of the scientific spirit on the part of any scribe to relegate them to matters of secondary importance. Microorganisms have before now received illuminating interpretations, but no other author besides Mme. Sage has endowed these objectionable bodies with the qualities which are sure to strike terror to the hearts of all in an evolutionary stage of education. Even Metchnikoff, in his most exalted moments, never fancied the attributes Mme. Sage bestows on microbes, pathogenic aerobia and anaerobia, ferments, bacteria and bacilli. In fact, there is only one gap in this chapter of earthly terrors, and that is the unpardonable omission of the gonococcus and the spirochæta syphilitica!

Now, though the foregoing remarks may strike the reader as conceived in a spirit of too much levity to invite serious attention, such has not been our purpose; for even while exposing the ludicrous side of the matter, we have not forgotten that medical books, as a part of a school curriculum, are positively harmful when built on the lines sanctioned by the French government. No immature mind, be it French or Anglo-Saxon, can benefit by twaddle, that is, a distortion of facts; and its insistence on the part of school authorities is a confession that ignorance is still an integral part of their make-up. Nothing is more harmful for the growing mind than a disintegration of common-sense through onslaughts by the supposedly necessary sciences; and especially is this true of medicine, since its correct teachings cannot be popularized to make them adequate to the undeveloped mind. As soon as educators throughout the world will realize the importance of the evil which arises from the usual popularization of medicine in school-books, there may be a resultant attitude which will be less avid for the torturing of the cells of developing brains, and more capable of a receptivity for the best dictates of reason.

OPINION AND CRITICISM.

A WISE ESSAY ON NUTRITION.

The saneness which permeates medical writings is not so frequent a quality that we need rejoice to excess. The visionary only too often creeps into the text of medical briefs to make of them a menace to our composure and an irritation to our correct thought. Though we are loth to see ourselves upset by obsessions which we know are merely assumed by medical philosophers to achieve notoriety on the doubtful ground of originality, such is the order of the day that many a sane writer allows himself to be carried away by vagaries, merely to achieve something new and startling in the province of medicine, so that his writings will not bear the stigma of plain, unvarnished truth distilled only from facts and theories, and be unaccompanied by an exultant exploitation of his own *ego*. Sir James Crichton-Browne, in his recently published book, "Parcimony in Nutrition," is so excellent an example of the truthful writer of medicine, that were it within our power to canonize him, we would at once bestow upon him this highest of all honors. For after the maelstrom of seething theories derived from the engulfing waves of Fletcherism, Chittendenism, Higginsism, Van Someranism, and the dietary standards of Voit, of Munich, and Atwater, of our own country, not to mention the pathetic Chewing Songs of Dr. J. H. Kellogg, of the Battle Creek Sanatorium, Michigan, a work on nutrition that harks back to the time when common-sense held sway over what and how much to eat to make society the force it should be for all its physical, moral and intellectual functions, is not to be regarded in the light of the ephemeral.

In the large survey which the author makes of this most vital subject he exercises the soundest sort of judgment. Starting with the idea that while experiments made in physiological laboratories are interesting, the results must be unsatisfactory, since conclusions drawn from experiments on animals are without weight or significance with man because the diet of animals has for ages been simplicity itself, while that of man has been complicated for centuries, he leads up to what is not unimportant to remember, namely, that all experiments which have been carried out on living beings have been of a temporary nature; therefore, statistics as to a low or high proteid diet being the proper course to pursue for the maintenance of health, cannot be considered reliable. As he very rightly says, though the low proteid diet prescribed for athletes some weeks before they engage in their exercises may be instrumental to put them in a fit condition for athleticism, would the continuance of the same diet, if persisted in for years, be conducive to health? Prisoners are known to continue for some time in a state of health on the low proteid standard

the economy of the State makes compulsory, but no thorough physical examination of prisoners after years of this sort of nutrition can show aught but a decided impairment of their physical health. "The Ballad of Reading Gaol" is no exaggeration of what ordinary prison fare may do to transform the physical and moral nature of the incarcerated into beings who have but small semblance to the normal man.

The proper nutrition of the individual so that he may be a useful unit in society is no small subject that can be solved by what a dog really needs in the way of proteids, as illustrated in laboratory investigations, or by the successes achieved by Horace Fletcher when he became the expert masticator of the world to reduce his obesity, and Dr. Ernest Van Sumeran followed in his wake and was cured of the gout. In a book published only a short time ago, "The Psychology of the Crowd," by Gustave Le Bon, we may read of the sources which produce periodic rioting and the larger manifestations such as revolutions. As Le Bon says, men are imitative to so great an extent that the mere massing of hundreds or thousands together will not be long in making common cause of some grievance, which would soon die from want of sustenance in a small gathering. But knowing what we do as to the dire effects of a low proteid diet, it does not require much ingenuity of thought to conceive that the unrest which precedes most revolutions which have been recorded in history, is not really due to the psychological infection of an idea but to the impairment of physical health followed by a derangement of man's moral nature. Aristophanes, though famous as a wit and dramatist, has little reputation as an investigator who could trace the relation between a proteid consumption and that condition of well-being which would not only make for the content of the individual but for the peace of the community. Yet in the "Knights" he refers to the Athenian public as "bean-fed surly Demos," thus showing that even in those early days of culture there must have been some understanding of the untoward results of a dietary consisting principally of vegetable foods.

LITERARY NOTE.

THE subject of cookery, historically considered, is always fraught with interest, but in no connection is it so enthralling as when the culinary customs of royalty are studied. One would think that in connection with "such divinity [which] doth hedge a king" the stomach would be a negligible quantity, but even in rather remote times when kingship stood for much more than it does in these modern days, the science of eating occupied about the most exalted position in a royal household. That this is not said in a spirit of levity is substantiated in Dr. Cornet's article "La Table des Rois de France" in the *Progrès médical*, of February 6, for aside from its historic interest, it is an enlightening chapter on the

tolerance and capacity of the human stomach when this organ belongs to the elect. During the reign of Francis I., and especially during the Renaissance, pork and venison, so monotonously popular in the Middle Ages, were no longer the only viands; Italian cooks invaded France; a diversity of meats was introduced, and the many forms of Italian pastry became popular. So great were the excesses of the table that special edicts were promulgated by Charles VI., Charles IX., and Louis XIII. against over-indulgence. Heliogabalus was easily rivaled by Henry III. At the marriage of the king's son, the duke de Joyeuse to Margaret of Lorraine, the feasts lasted seventeen days. But it was no unusual occurrence during the reign of Henry III. for the royal guests to be feasted to satiety, history recording that on one occasion "the Queen-mother (Catherine de Medici) ate so much that she came nigh bursting and was so sick that her further presence at the table would have disgraced her. It was reported that over-indulgence in artichokes and cockscombs, of which the Queen was very fond, was responsible for the disturbance."

And here it would be well to remark that during the reign of Henry III. the fork enjoyed a popularity unknown before; a very fortunate thing, indeed, when one remembers that the putting away of great quantities of food was really overburdening knives and fingers. Montaigne, for instance, bewailed the fact that his fingers were greatly abused whilst eating, in the following sentence: "I bite my fingers now and then in my eagerness to swallow food." Although Henry IV. was abstemious in the early part of his reign—lack of money being the decided obstacle to the gratification of a healthy appetite—directly he married Marie de Medici, sumptuous banquets took place. If this king had one weakness it was a liking for sardines, and on one occasion when he was suffering from a fever, he cured himself, despite the advice of his physicians, by eating large quantities of oysters. In fact, his many attacks of indigestion were invariably due to his non-resistance to the blandishments of the oyster. But though the kings already mentioned were prone to overeat, it remained for Louis XIV., the idolized Sun-king, to set an example for all gourmands, whether royal or plebeian. If we are to believe the princess palatine, Charlotte of Bavaria, Louis XIV. could eat at one repast, four plates of soup, a pheasant, a partridge, a large plate of salad, two huge slices each of ham and of mutton, the latter plentifully supplied with gravy highly seasoned with garlic, a plate of pastry, fruit and hard-boiled eggs. Here was surely a gourmand blessed with an exceptional appetite and who, moreover, had the good fortune to command the respect of all his doctors, whether the medical attendant was Wallot, d'Aquin or Fagon. The last named, by the way, initiated this vast royal stomach into the delights of "the mellow-tasted Burgundy," preferring it to champagne because "it was not long in turning sour on account of tartar and an absence of alcohol."

ORIGINAL ARTICLES

THE THEORY OF THE "COMPLEX."

By WILLIAM A. WHITE, M. D., of Washington, D. C.

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I. INTRODUCTION.

The term complex as used in this paper is comparatively new but like most new terms it does not correspond to an altogether new idea. It is but the recent German clothing of an idea that has found expression for many years in France and later in this country under the designation of "dissociated state." With the advent of the theory of the complex, however, the study of what had formerly been called dissociated states received a new impetus and as a result, complex, as used to-day, has a considerably broader connotation than dissociation.*

II. MIND AS ADAPTIVE MECHANISM.

For the purpose of psychiatry, at least, mind may be considered, as an adaptive mechanism.† True to this characterization it is constantly exhibiting adaptive phenomena. While we all recognize

*Janet: *The Mental State of Hystericals.* (Trans.) N. Y., 1901.

Sidis: *Psychopathological Researches in Mental Dissociation.* (N. Y., 1902, Boston, 1908.)

White: *The Retraction Theory from a Psychical Standpoint.* *Proceedings Am. Med. Psych. Assn.*, 1899, and *Arch. of Neurol. and Psychopath.*, 1901.

†White: *The Nature of Insanity.* *Washington Medical Annals*, Sept., 1907.

those more patent adaptations of the individual, mental in origin, whereby he adjusts himself to the social conditions in which he lives, adopts the customs, observes the conventions, and obeys the laws, we hardly appreciate the extent and the minute detail to which efforts of adjustment are carried under circumstances where they are not quite so obvious.

Some two years ago during a vacation trip abroad I saw for the first time the Alps. My drive over the Furka Pass was a revelation of the most gorgeous scenery I had ever beheld, but I was nevertheless disappointed. The mountains did not seem nearly so stupendous as I had pictured them to my "mind's eye." My companion who had been through the Alps many times insisted that I was drawing entirely erroneous conclusions as to distances. But I knew better, for could I not *see*? However, he was so positive in his statements, that I "lay about" with my eyes for proofs to disconcert him. I no sooner did this than I began to find that I was wrong—not he. Distances that had seemed insignificant were thousands of feet, and mountain peaks where I was sure I could have seen a man, had he been standing there, proved to be at such an altitude that a man would have been lost to vision as an insignificant speck against a neutral background long before reaching them. The marvelous grandeur of the Alps was beginning to unfold itself before my vision. The character of the images on my retina had not changed but it took my mind some time to adapt itself to these new circumstances and surroundings, some time to realize—to *see*—the stupendous heights which were presented to its wondering gaze for the first time.

In many cases the adjustment is not so readily made nor is the difficulty at all appreciated. Those who are fond of music and who are affected by a voice know how tiring a recital may be if the singer is, for any reason, unequal to the proper rendering of a difficult piece and must make a very constant and very evident effort in the interpretation. The listener finds himself unconsciously trying to assist, his muscles at times actually tense, and if he is a singer he may actually go home with a throat tired out by his efforts to assist the artist in reaching high notes and sustaining difficult phrases.

So, too, we get a feeling of unrest from certain illy balanced structures. The Greeks recognized this in their architecture. The Greek column is made bulging in its middle and is thus reinforced at a point which, in a column with straight lines, seems weak and therefore gives a sense of unpleasantness to its contemplation.*

III. MODES OF REACTION.

The consideration of mind as adaptive mechanism is necessary in order to understand its various modes of reaction under different conditions. Here as elsewhere in natural science we are most often assisted in understanding difficult and intricate mechanisms by a study of those

*Judd: Psychology, N. Y., 1907.

cases in which, for any reason, the machinery is out of order, and so a few of the simpler examples, particularly those where the adaptation fails, are worthy of note as forming a natural introduction to the subject of this paper.

Whatever it may in essence be, the mind has its limitations and restrictions which in every day life must be observed. Like any mechanical force its operations cannot be spread efficiently over a wide area. To accomplish results the attention must be centered on the work in hand to the more or less complete exclusion of other and distracting influences. The college professor who takes out his watch to observe the time and then calmly tosses it into the nearby lake, or while pondering over a mathematical problem runs into a cow and raises his hat politely with a "beg pardon" are familiar examples of the defects of conduct resulting from this conservation of mental energy—its restriction in narrow channels—the so-called absent-mindedness.

Of a considerably different type is the case communicated to me of a young man who as a child had been disagreeably affected by seeing some criminals and who all through life thereafter would walk any distance out of his way to avoid passing a prison or a jail. Similarly the case of a child who was frightened by a false face and always thereafter had a marked dislike for a homely countenance. Mosso* gives the interesting reply of an old soldier to the query as to what his greatest fears had been. He said: "I have only had one, but it pursues me still. I am nearly seventy years old, I have looked death in the face I do not know how many times, I have never lost heart in any danger, but when I pass a little old church in the shades of a forest, or a deserted chapel in the mountains, I always remember a neglected oratory in my native village and I shiver and look around, as though seeking the corpse of a murdered man which I once saw carried into it when a child, and with which an old servant wanted to shut me up to make me good."

These last three examples all show modes of reaction to disagreeable conditions in the environment and were all developed upon the basis of states of fear.

In this connection it is in order to make a passing comment on the much worn subject of the relation of body to mind. This question has always been a poser for the psychologist and psychiatrist alike, but from the point of view of the psychiatrist at least it may be considered as purely academic. The fact for us to consider is that the individual reacts to external conditions not simply from a physiological or from a mental basis but that he reacts as a whole—as a biological unit—and in this reaction are both physiological and mental elements, sometimes one and sometimes the other, dominating the picture. Now in fear, for example, we know that there are many physiological changes—the

*Fear.

tachycardia, dilated pupils, tremor, relaxed sphincters, respiratory and secretory disturbances—but the only reason we give it a name that applies primarily to the mental rather than to the physical state is simply because the mental facts so overshadow the others that they are quite overlooked.

This fact, that mental reactions, illustrated by the extreme case of fear, are fundamentally reactions of the whole individual, is important to bear in mind and serves to explain many otherwise inexplicable phenomena in psychopathology and to indicate the directions in which explanations for still others may be found.

IV. DEFINITION OF THE COMPLEX.

So far all my examples are from normal reactions. The way to the abnormal, however, is not far and these are, of course, what interest us most. We see in all these cases that ideas, tendencies, inclinations, fears, disappointments, are capable of bringing about mental reactions that are manifested entirely apart from the individual's volition. The forgetting, a sudden religious fervor, a pleasant dream, perhaps, come about without any reason so far as the subject knows.

Take for example the case of Irène, cited by Janet.* This poor girl, living in a garret in abject poverty, nursed her mother through a long illness with consumption ending in her death. During two months she watched her mother gradually nearing her end and was at the same time forced to work at sewing to get a little money for the bare necessities of life. Her mother died and in her anguish she tried to revive the corpse which during her manipulations fell to the floor and was only lifted back to the bed with great exertion. After all this was over Irène forgot completely not only her mother's death but the amnesia was retrograde and she did not even remember her illness. She said, "I know very well my mother must be dead since I have been told so several times, since I see her no more; but I really feel astonished at it. When did she die? What did she die from? Was I not by her to take care of her? There is something I do not understand. Why, loving her as I did, do I not feel more sorrow for her death? I can't grieve; I feel as if her absence was nothing to me, as if she were traveling, and would soon come back."

This example from the realm of hysteria, gives us a good idea of what is meant by a complex. This term is employed to designate a group of ideas clustered about, constellated as it were, a central event, which event has a large content of painful emotional coloring. You will see how this describes our cases if you will review them for a moment. All of the acutely painful circumstances of her mother's death and even such associated ideas as those connected with her early illness are dropped *in toto* from Irène's memory.

*The Major Symptoms of Hysteria.

The special thing to note is that the ideas that are thus associated together are grouped about a certain event and that this event conditions a highly painful emotional state.

It is to such a constellation of ideas, cemented by painful emotion, that the term "complex" is applied and when the complex produces a mode of reaction (in this case amnesia) without the patient being aware of its existence it is spoken of as *dormant*. Let us, however, go a little further in this direction. Muthmann* has compared the complex to an abscess and the defensive reactions to the limiting wall of fibrin. I think, however, that it were better compared to a localized inflammation with its surrounding area of tenderness. Take for example the lover who has had a quarrel with his mistress: He enters into conversation with a lady when a chance expression, a vague suggestion of the odor of a well known perfume, a something equally as trivial reminds him of her and the quarrel, he flushes, becomes confused, changes the topic of conversation, leaves unceremoniously and otherwise shows that the sore spot has been touched and the defense reactions are brought into play to remove him from the source of irritation. This method of reaction is quite common and typical of the dormant complex with large emotional content.

We typically find evidences of the complex then under circumstances in which the mental reactions are aimed at an effort of adjustment to inimical, disagreeable, disintegrating factors in the environment. Under such circumstances we find a series of protective reactions, guarding the mind against these inimical influences, which are just as well defined as the protective colorings of insects or the defense reactions of the body against infection.

V. TYPES OF DEFENSE REACTIONS.

(a) *Forgetting*.

Of this class of reactions the various types of forgetting are the most pronounced. Painful, disagreeable experiences, the mind in its protective, conserving efforts tends to avoid, to put aside, to consign to the limbo of the forgotten. With all the thousand and one things to be done the painful facts of life must not be permitted to occupy the center of the stage—they must give way to the business of the hour. Take, for example, the case of the young man cited by Jung.** He suffered the pangs of unreciprocated love—the young lady married another man. When later he came to have business relations with his rival he found himself always unable to call his name and had repeatedly to ask it of others in conducting his correspondence. Or take the case cited by Maeder.† A young man sees a performance of Samson and Delilah; it

*Zur Psychologie und Therapie Neurotischer Symptome.

**Ueber die Psychologie der Dehementia Præcox. (Translation is published as No. 3, of the Nervous and Mental Disease Monograph Series.)

†A la Psychopathologie de la Vie Quotidienne. Archives de Psychologie. Tome VII, No. 27. (Feb., 1908.)

awakes a series of painful memories. A few weeks before he had read the review of a book to his fiancé, which treated of the indelible impressions of the first love on a woman. He thinks of the possibility of a separation from her and later the whole event, together with the contents and authorship of the book, very kindly drop from his memory. Later they are revived under the influence of an optimistic mood which they are incapable of affecting.

(b) *Compensatory.*

Another type of reaction which is wisely provided for in the general scheme of things is the "compensating." For the sadness and sorrow, the blasted hopes and disappointments, the trials and tribulations, the mind again comes to the rescue. We are familiar with the way in many cases. We understand the young woman, disappointed in love, who takes herself to a nunnery and devotes her life to the service of religion. We have all seen men under similar circumstances plunge into the distractions of a strenuous life, or not infrequently into the elusive forgetfulness of alcohol or opium. The ideal occupation of the disappointed woman is that of a nurse—for while it brings forgetfulness in new interests it likewise affords compensation by giving play to the maternal instinct.

How large a part these compensations play in daily life, what a tremendous force they are against the "slings and arrows of outrageous fortune" we can hardly appreciate. It is well worth while to read the philosophy of the great German immoralist from this standpoint. Nietzsche founded his explanation of Christian ethics upon the theory of compensation. The Jews, a weak and persecuted race, made of necessity a virtue and glorified humility and the "poor and lowly in spirit." This, the "slave-morality" shows us on its obverse side a fully adequate compensation for the sorrows of life, not in this world, but by life and a "joy everlasting" in the next. Whatever may be said of Nietzsche's philosophy we surely know many persons whose path is made easier among many troubles by an abiding faith that all things are for the best, and everything will ultimately come out all right, if not in this life then in the life to come.

Among the very common types of compensation are the wish-fulfilling dreams and the wish-fulfilling deliria. We are all more or less familiar, for example, with the very remarkable life of imagination which children lead, how they live in a world of fancy peopled by the creations of their own minds and teeming with events of the most dramatic interest. For hours these little ones at play will live in a world all their own, associated with kings and queens and waited upon by mighty soldiers, and in their hours of sleep they find in the land of dreams their hopes and ambitions all realized. The little boy dreams he is a motorman, or a policeman, the

little girl reigns as a beautiful princess, so with these wish-fulfilling dreams added to the day-time fancies the world becomes a beautiful place to live in even under circumstances in which we older ones find little that makes for happiness.

Quite parallel with this example, we find in the realm of the abnormal, that many cases of the most profound melancholia have compensatory dreams. If they are parents, for example, they dream of being back with their family, surrounded by their children and those they love, and so the misery of the day often finds relief in the visions of the night—certainly a very practical, and undoubtedly efficient, so far as it goes, defense reaction against conditions that tend to destroy.

Or take another case cited also, I believe by Janet,* in which a young girl about to be married is deserted at the altar by her fiancé. She falls into a wish-fulfilling delirium† in which all the events of the marriage as it would have occurred, took place. What I have called a vicarious psychosis. The patient in order to get what she wants out of life and what she had expected and prepared for, resorts, so to speak, to the device of a psychosis.

(c) *Mental Attitudes, Moods, Character.*

We are surrounded at all times by innumerable examples of the effects on conduct of suppressed disagreeable or painful emotional states. Take for example the man who is past middle life and with whom the subject of his age is a somewhat tender point. See how by his attitude he resents being helped on with his coat. He refuses to acknowledge to himself that time has wrought any changes and he resents such a suggestion from another no matter what the kindly motive behind it.

We see again these defense reactions toward special situations shown exceptionally well by the deaf who insist upon appearing to understand what is said to them though perhaps hardly hearing a word. They attempt by their attitude to conceal their infirmity and thus ward off criticism of their defect and consequent decreased efficiency.

Persistent moods are also often conditioned by dormant, submerged complexes. That witticisms, jokes, puns, are means of side-tracking painful emotions is a common-place, while the sad and melancholy mien of the professional funny man is proverbial. The anecdote is told of a noted Parisian entertainer who sought the advice of a physician for great depression of spirits. The physician advised his patient to go to the theater and hear a certain wonderful comedian for, as the physician said, "Monsieur X. can make any one laugh." His patient replied, "Alas, doctor, I am that unfortunate individual myself."

And so complexes not only dominate special attitudes, and condition moods, but if persistent, deep seated, and continuous, they are often

*I have been unable to verify this reference.

†The word delirium here is used in the sense given it by the French, namely, to apply to the sum total of the patient's delusional experiences.

at the bottom of the prominent traits of character. These prominent character traits are especially well seen in those cases in which the complex has been constellated by a painful emotion of sexual* origin. The stereotyped example of the "old maid" scandal monger is a case in point. Deprived of that great boon to woman, maternity, robbed of love, living a life of bitter disappointment and unfulfillment, if she mayhap has a distinctly sexual longing she takes this method of adjustment, this method of approach and contact. The reading of an erotic novel would be distinctly improper, and if she were discovered would be adversely criticised, but the scandalizing of her neighbor is a highly respectable proceeding and keeps her quite within the conventions, and so the delectable morsel is rolled over and over again and as life becomes more bitter, as fulfillment becomes more and more impossible so does her resentment show more and more aggressively, more and more openly.

The phrase "misery loves company," takes its origin from the desire of those who have failed to pull others down to their level. It is an expression of the jealousy, envy, resentment, that they feel for the successful, and if they cannot succeed literally they can at least play at it in their fancies. Compensation is approached by a mental trick, a deception practiced upon one's self.

VI. MEANS OF EXPRESSION OF THE COMPLEX.

We have already seen in our previous examples several means by which the complex asserts its presence and seeks expression. We have seen how, in hysteria especially, the means employed is often amnesia for the painful occurrences.† In certain conditions of depression the dream comes to the rescue, while in certain other states *transferences* occur and methods of expression are chosen to take the place of those denied.

Quite frequently the mind seizes upon a single feature in connection with a painful incident and the complex reaches expression through this alone. This feature thus becomes the complex indicator.

One of my cases, a young girl, had received a severe shock by the suicide of a young man at a party. She saw the blood and was deeply affected. The memory of the whole affair dropped completely out of her mind but it was only necessary to show her something red to produce the feeling of fear. I sent her on an errand one day to a ward carpeted in red. She quickly came running back to me, trembling, crying and frightened, although she could not explain why she was so affected.

*The word sexual in this paper is not used in the narrow sense in which it is often employed but with the broadest possible meaning. It refers not only to the physical relations between the sexes, but to the most distant and most indirect mental and emotional reverberations. It is used to include a domain much more extensive than that usually comprised in the word "love."

†White: Mental Dissociation in Psychic Epilepsy, in Sidis: Psychopath. Researches.

A case of Janet's* shows a very similar condition. A woman lost a very dear friend. She only retained one souvenir of her friend—a valuable old dog. Two years after his master's death the dog died. The lady had a very profound emotional disturbance as a result and later suffered from hysterical seizures which might be brought on by simply hearing a dog bark in the street. The case shows well how thoroughly the outposts can be sentried to protect the vulnerable point. Not only the barking of a dog but certain words might bring on an attack so she forbade the use of them in her presence. The words, "love," "affection," "happiness," are examples. She forbade also that any date be mentioned before her—in fear of being reminded of a certain date she forbade the mention of any.

Not only are such incidents or accompaniments singled out as complex indicators as are illustrated in these two cases but quite frequently the motor accompaniments become much exaggerated and in attacks so overshadow every other symptom that the cases seem to have lost their essentially mental characteristics and in fact may be mistaken for epilepsy.

Sidis** cites the case of a young man who had epileptiform attacks that manifested themselves by "shaking spells." The shaking began in the extremities and soon involved the whole body. Sometimes he fell down shaking and trembling all over. The attacks were traced to his experience as a child when he was forced to sleep in a dark, damp, and bitterly cold cellar.

This last well illustrates the association of the physiological with the psychic. These physiological disturbances are constellated with the mental and the two classes of phenomena recur together. We have already seen that with emotional experiences there always go along certain physiological disturbances. In these cases the physical appears in the foreground and the mental, while it exists, is not apparent on the surface. But why should this prominence be given the physical? Why should not the emotional expression find its natural-mental-channel of outlet?

The answer to the question why the complex does not express itself by mental phenomena primarily is that the whole affair is a defense reaction, a protective device for repressing the complex, for keeping painful mental facts out of consciousness. These repressed emotions must, however, find an expression somehow. Their episodic manifestations in crises finds an explanation not unlike that for the epileptic attack. The complex with its large emotional content being repressed, dissociated, falls out of association with the other facts of mental life and so its accumulated energy finds no easy channels of exit. The complex therefore is dynamogenic and when sufficient energy has been accumulated to overcome resistance, to break down barriers, an explosion—

*Mental State of Hystericals.

**Studies in Psychopathology.—Boston Med. and Surg. Jour., March and April, 1907.

an attack—takes place. In this attack the energy set free naturally flows along lines of least resistance. If we consider the various activities of consciousness as constituting a hierarchy we will see that the psychomotor levels are relatively low, so that as the tendency in attacks is for the energy to seek lower rather than higher levels, these psychomotor outlets furnish the channels of least resistance. We find, therefore, convulsive phenomena—*conversions*—quite the rule.

Distinct sensory types of reaction may also be found and when sensory disturbances come on apparently spontaneously and precede the crises the similarity to epilepsy with a sensory aura is often marked. One of my patients had attacks resembling *petit mal* each time preceded by a headache. She had during an early seizure fallen and hurt her head. Another case had psychic attacks preceded by a sensation of green. His original traumatism occurred on a stage carpeted with green baize from which he was carried, face downward.

A more baffling method of manifestation of the complex still is the symbolic. One of my patients in his delirium when asking for a cigarette used a peculiar sounding expression which I discovered later was a foreign word. The explanation of the application of this word as the name for cigarette transpired when I discovered that he had upon one occasion been to the races and won considerable money by betting on a horse of that name. Afterwards he had indulged himself in some very expensive cigarettes with the money thus won. The connection is obvious—the cigarette was symbolically represented by the race horse.

Jung* cites a very instructive example. "A gentleman wishing to recite a poem beginning 'a pine tree stands alone, etc.,' with the words 'with white sheet' he forgot everything. This seemed so peculiar that Jung got him to reproduce what came into his mind with these words. The following very significant series of associations resulted. "White sheet makes one think of the cloth for the dead—a linen cloth with which one covers a dead person—(pause)—now I think of a near friend—his brother died quite recently—he is supposed to have died of heart disease—he was also very corpulent—my friend is corpulent too, and I thought it might also happen to him—probably he does not exercise enough—when I heard of this death I suddenly became frightened, it could happen to me, as we in our family are predisposed to obesity—my grandfather also died of heart disease—I too find myself somewhat too corpulent and have therefore within the last few days begun treatment for reducing fat."

Here we see how the repressed anxiety which this gentleman had about his condition resulted in a reaction while reciting a poem in which he saw himself symbolized by the pine tree enveloped in its white sheet of snow. Jung also explains the wish to recite this poem as based upon a desire to effect, in this symbolic act, a discharge of the complex tension.

*Loc. cit.

If this explanation of Jung seems far-fetched to you, think again for a moment of some of the phenomena of wit. We all know how frequently the man whose life is filled with sorrow and disappointment becomes noted for his witticisms, while the explosion of a jumble of puns, thin jokes, and "airy nothings" is a method belonging to the stock-in-trade of every "emotional actress" to use to turn away suspicion when surprised in a situation she cannot explain.

These *transferences* of emotional expressions into channels other than the normal and usual ones are quite common. The transfer may become permanent and often takes on a symbolic character. Take, for example, a certain type of childless women who lavish all sorts of affection upon dogs, cats, or birds. Here the nature of the repressed complex is quite evident while the cat, or the dog, as the case may be, becomes symbolic of this complex and so may be considered as a symbolic complex-indicator.

An excellent example of symbolism in dream consciousness is given by Freud.* In this case the dreamer is symbolized by a powerful brown horse that was being hoisted by a thick belt to a great height. Suddenly the belt broke and the horse was precipitated to the ground but soon rose and galloped away. The strength of the horse stood for the power of the dreamer to work, the ascent to dizzy heights his ability to succeed, the belt indicated that he could not succeed by his own efforts alone but must have help, the breaking of the belt showed failure when this influence was withdrawn, but the fact that the horse was not killed but got up and galloped off symbolized his indomitable energy and ability to rise again when once defeated.

VII. GENERAL CONSIDERATIONS.

These *transferences*, *conversions*, *symbolisms* and other phenomena form interference complexes with each other and with the train of thought and produce very complicated results that often become practically impossible to unravel. It is really wonderful, however, how successful psychoanalytic methods applied with great patience have been. In Jung's† classical case of paranoid dementia praecox the apparently incoherent remarks amounting at times to "word salad" and the neologisms of the patient which she freely made use of, were explained in a way little short of marvelous. He was able to explain, for example, the expression "double polytechnic," which was frequently used by the patient, as an expression standing for the highest art and wisdom. The words "Hufeland" and "unhufeland" are found to refer to a once celebrated doctor by that name while the sentence "I affirm a million Hufeland to the left on the last fragment of earth on the hill above" Jung says is a metaphoric paralogic condensation for what to a normal mind would be

*Cited by Jung—loc. cit.

†Loc. cit.

expressed approximately by "For the bad treatment of the physicians which I have to endure here and with which I am tortured to death, I claim a high indemnity."

And so we see how the mind develops certain modes of reaction which are aimed at adjustment with surrounding conditions or as we often say "getting square with events." We see, too, how, when disease has pulled the mental superstructure to pieces and it comes tumbling down in ruins, the same effort at adjustment continues, but it is, of course, expressed in a much more imperfect and incomplete way. Such studies as I have indicated lead us to the inevitable conclusion that nothing mental is fortuitous, that for every mental fact, be it the most trivial or apparently meaningless expression, there is an adequate reason. If the theory of the complex had done nothing more than this it would have accomplished a great deal for it has given us a new outlook upon the mental factors in the psychoses. We no longer should feel satisfied with passing mental symptoms by with the remark that they are "strange," "remarkable," "incoherent" and with the use of like vague and meaningless terms. We should feel that we have a new avenue of approach, that a host of new facts have been opened up and that much can be accomplished by patient, intelligent observation and study of cases.

I feel quite sure, for example, that the patient who says to me, "Now you have a body like a young man who says he is of the prestigitis," or the other patient who says "I have been raking away at it outside and in and inside and out again. I have tried to write poetry, but could not write any more than six fools," have both fairly definite ideas at bottom of this apparent incoherence to which their methods of expression correspond.

This whole matter harks back to the fundamental necessity of having our mental facts in their proper setting if we are to understand them at all. A very simple incident will illustrate what I mean. I had called at a home one evening to see a patient when I noticed that the nurse, a Miss B., who had had charge of the case, had been replaced. I asked where she was and was informed that she had gone in conformity with a previous arrangement to take care of Mr. X's daughter who had recently been married and expected to be confined. Just then the telephone rang and some one inquired for the nurse. The young lady who had given me the information about the nurse answered the telephone and I heard her say that she had left but she could not tell where she had gone as she did not know who the people were, the nurse having failed to tell her their name. The first impression, very naturally, might well have been that my lady was indulging in that well known social evasion a "white lie" but when she returned from the telephone with the comment that it was rather unfortunate for the nurse to go away without telling her the name of the family where she was going, that she did not know who Miss so-and-so married, the explanation was perfectly clear. We can not expect to be able to judge of mental facts in other than their

mental setting, a thing, however, which we have been trying to do for long years with rather discouraging results.

From another view-point the illustration given by Jung* is instructive. Suppose we go into a man's office and while seated engaged in a business conversation with him a clerk brings in a paper and lays it down upon his desk. Immediately the man flies into a passion, gets red in the face, gesticulates, and uses forceful language. We wonder what ails him but when we find out that day after day, time after time, he has cautioned the clerk, told him not to do just that particular thing we can understand his behavior. The act of the clerk was simply the "last straw" that served to break the back of his self control. And so how often in life we only see the last link in a chain of events, and how prone we are to draw conclusions which would probably be entirely different if we knew all the facts.

Another and equally instructive example in the realm of the abnormal is that of Miss P., a case of dementia praecox. She wrote the following letter to her uncle:

"Washington, D. C.

Dear Uncle:

I am insane as I have been place—in the asylum in the brain favor as Uncle Bee—was once accused of being craisy over seeing to much of the Doctor intuition of being deying of death over worrying of seeing my own self Home, where I belong as I am 'Eplay, in trouble all my life & Hope I re gain cinarc tonces of mind in Body & Kind show me by my own be able in Doctor Office I hope Mrs. E. & Aunt Ida I join love to all Very own to claim my own Mind bye from

Affection Neice Sarah."

This patient although noticeably demented presented a quite natural appearance to casual observation and despite the fact that her writing is so incoherent, talked well about simple things and answered questions with a fair showing of intelligence. I showed her this letter and asked her to read it aloud and tell me if she wrote it. She took the letter and read it with a perfectly serious manner and said that she had written it. Her whole attitude when reading the letter and being questioned about it gave no indication that it impressed her as in any way strange. On the contrary it was quite natural and she appeared while reading the letter to have a full comprehension of its contents. Here again we are not justified in coming to hasty conclusions without the proper mental setting for the mental facts. The mere fact that this letter is hopelessly incoherent and incomprehensible to us does not necessarily mean that it was to her, and her attitude while reading it certainly indicates that it was not.

I am tempted at this point to illustrate a conception of mind, which the consideration of complexes leads to, by a figure of speech. The mind can not be conceived as consisting of or containing ideas which are deposited here and there, helter skelter, without order as the scraps of paper that are thrown carelessly into the waste basket. Quite the contrary. Ideas are grouped about central experiences, constellated as we

*Loc. cit.

say, built up into coherent and harmonious structures not unlike the way in which bricks and stones are brought together to form buildings and these buildings are again grouped according to the purpose they fulfill, as government, business, residential, etc. The city is built according to a general, though often not very definite plan, it has its avenues of approach, its highways and by-ways, its systems of traffic lines communicating between the different sections, etc. The central part of the city is pretty well organized and constructed, here little change goes on, but in the outskirts new ways are being opened up and we see lying all about building material not yet assembled to form new structures. Now suppose an earthquake destroys this city—what happens? All these fine buildings come tumbling down. The walls crack and crumble and the bricks come falling to the ground. Here and there only a wall, a tower, perhaps a whole building remains standing. The foundations of all these buildings, however, remain fairly well preserved, in outline at least; it is for the most part the superstructure that has been destroyed. Now suppose we try to enter the city by the usual way, we will find ourselves almost immediately arrested by masses of debris, we will see that the streets that we were familiar with are blocked at many points, that the whole picture looks unfamiliar and that landmarks are very difficult to recognize. Here for example the foundation of a church which was razed by the shock has been buried beneath the bricks of an adjoining commercial house. All of the component parts of the city are still here but in quite different relations and in this mass of confusion only the trained eye of the old resident can see the traces of the old order of things and pick out the old landmarks.

And so it is with many of our patients, particularly our *praecox* cases, where the dilapidation of thought is so pronounced. The fundamental things of mental life, the foundations, remain until the last but they are often buried under masses of debris and their location indicated by ideas with which before they never had any connection. So, too, if we try to approach these cases we will find them quite inaccessible by the usual avenues; we must take our bearings anew, draw up a new ground plan—the old one will not suffice.

Our patients live a mental life all their own, even talk their own language which is incomprehensible to us. If we are to gain access to them we must learn the avenues of approach. No attention may be paid to ordinary efforts at conversation but the use of a complex indicator may open the flood gates so that all there is left for us to do is to listen.

The differences between the sane and the insane, however, are only differences of degree, not of kind. Every process that we may divine in the insane mind has its counterpart in the sane. This is especially well seen in the manifestation of complexes that are dormant or submerged. In the insane these buried complexes determine largely the symptoms of the mental disorder while in the sane they are at the bottom of the moods, the disposition, the "make-up," in short the character of the indi-

vidual, and determine his actions along conventional lines, lines prescribed by training and custom.

A study of the conventions and customs, the folkways, would be very instructive in showing us the methods by which these buried complexes operate. They would show, for example, that reactions directed by them are not amenable to reason—in this respect resembling the obsessions of the psychasthenic. For example, to show respect we uncover our heads, the Orientals uncover their feet. Why is this? The reason for it lies buried in history, the foundation for their reaction has long since been hidden by a complicated and bewildering superstructure. The foundation being inaccessible it would be quite impossible to change the custom by an appeal to reason which does not reach to the root of the matter; it is not the avenue of approach.

This example reminds one of another much nearer home and more familiar. It might be facetiously referred to as the bipolar variation of modesty. I refer to the changed feeling of shame which affects the modern society woman depending upon whether she is in a ball-room or on the sea-shore. The dictates of fashion in this instance have nothing reasonable about them and I think it would be quite easy to gain general assent to the proposition that the mere surroundings could not possibly affect the fundamental question as to the inherent impropriety of the exposure of a certain portion of the body. But even though we gained this assent we surely would not expect the custom to change as a result. The whole reaction seems ridiculous just as an obsession does because we do not know the real rationale of it. It would seem more absurd still in comparison with other peoples. For example, among the Tuaregs—an Arabic tribe of the Sahara—the men wear a veil over the mouth and would consider it improper to remove it except in extreme intimacy. It is worn while eating and not even removed to sleep.*

And so I might go on indefinitely with illustrations from normal and from abnormal mental life and from the realm of the social customs and usages. In the end we find that we have a somewhat broader and more comprehensive view-point of the phenomena of mind in action, a view-point I believe pregnant with many results for the future. Much has already been accomplished, as a result of the new outlook, in the way of developing methods of examination and analysis of cases, and as a corollary to these new methods we are beginning to see the way to a more rational treatment. Of these and many other things, however, the limits of my paper forbid mention.

VIII. CONCLUSIONS.

The main conclusions to which this paper tends are that the operations of the mind are never fortuitous—if we ever seem to see mental events that have no efficient cause it is only because we are not in posses-

*See Sumner: *Folkways*, 1907.

sion of all the facts. Ideas neither arise spontaneously nor do they exist without having established relations with other ideas—again because of a good and sufficient reason. The relationships thus established are brought about and cemented by the emotional content of the event which brings them together and they bear thus a relation of interdependence as among themselves—they are constellated. These constellations exist as the mental counterparts of events and correspond to experiences which have emotional content. Thus do our sorrows and our pains, our longings and our desires, in fact, all of the springs for action, exist as organized though submerged groups of ideas which, from behind the scenes, as it were, direct our conduct.

CONGENITAL SYPHILIS IN INFANTS.

By ISAAC A. ABT, M. D., of Chicago.

So much is written in every treatise on congenital syphilis about the theories concerning the transmission of this disease that no reference will be made in this brief paper to that portion of the subject. It is proposed to consider for the most part the pathological changes and the manifestations produced by congenital syphilis on the infantile organism. It is an old and well known clinical fact that syphilis in the parents frequently prevents conception, or that the fetus from such parents dies prematurely and that maceration and abortion occurs, also that not a few of the so-called congenital malformations are caused by syphilis in the parents without any discernible luetic symptoms.

A considerable number of syphilitic infants, who are apparently well at birth, die of marasmus before the end of the first year. Babies with congenital syphilis show a high mortality rate.

In congenital syphilis, no primary lesion occurs. For this reason it is assumed that the disease very soon takes on the character of a severe general infection, and for the same reason it is thought that the virus of the disease must diffuse itself rapidly.

A few years ago, this point seemed to be verified by those who studied the etiology of syphilis in infants; they were impressed by the wide distribution of the spirochæte pallida, in the organs of children suffering from congenital syphilis.

LeVaditi, Verse and others among the early investigators found it possible to demonstrate spirochæte regularly and in large numbers in the organs of syphilitic infants.

In the majority of cases, syphilitic children are born with some symptoms of the disease; in a few cases manifestations occur shortly after birth. Many clinicians of experience doubt the occurrence of congenital syphilis years after birth without the occurrence of early symptoms. They believe that the early symptoms were overlooked.

This point, however, is controversial. As has already been pointed out a moment ago, congenital syphilis is almost at once a general disease, and for this reason the lymph glands do not play the part that they do in acquired form.

The lymph nodes are seldom involved to any marked extent and for this reason, the visceral organs in congenital syphilis are very soon affected.

Syphilis in the growing organism is capable not only of producing specific tissue changes, but also the disease interferes with the normal

development of tissues and organs so that said organs may be stunted in growth.

Hochsinger makes the point that circumscribed gummata are far less frequent than diffuse infiltration of organs in congenital syphilis. The changes produced by this disease are imposed very early upon the blood vessels and the connective tissue elements and vascular structures. The pathological changes are most marked in those organs where the blood supply for growth and development is most urgently needed. This explains why internal structures like the mesenteric glands—lungs, liver and epiphyses of bones are involved so frequently and so early in intra-uterine life.

The skin lesions occur, for the most part, later than those of the internal organs.

The macular and papular lesions differ slightly, if at all, from those of the acquired variety. Neumann points out that in congenital syphilis the skin eruption seems to select certain localizations. The macules occur particularly on the face and in the genito-anal region. Moist hypertrophic papules are of rare occurrence. According to Kaposi, a polymorphism of skin lesions is characteristic for congenital syphilis. Several varieties of lesions occur at one time. Two forms of skin involvement occur in the congenital variety, which are not found in the acquired and have important diagnostic significance for the former, particularly on account of the location and the form of the lesion. This affection which shows predilection for palms and soles does not always desquamate and is called, by Hochsinger, "diffuse hereditary syphilitic skin infiltration."

Children are not born with this skin condition. It usually occurs at the fourth week, or later, and does not occur after the first year. It is observed that the skin at the site of this lesion is smooth and glossy. This is due to the tension produced by infiltration of the underlying skin.

The second form of skin lesion characteristic of congenital lues is pemphigus. The most frequent and characteristic localization is the palms and soles, though other parts of the body may be involved. The clear fluid of the bulla or vesicle may soon be converted to pus. The sac may rupture, leaving an ulcerated and necrosing or suppurating surface.

The fissures, or rhagades, at the angle of the mouth are commonly observed. Hochsinger believes that these are also due to infiltration into the vessels, the mucous glands and the skin and also may be ascribed to round cell infiltration. This is followed by a loss of superficial epithelium. Movement of lips and sucking cause a tearing of mucous membrane and the linear ulcers, or rhagades, result.

H. G. Adamson (*British Journal of Children's Diseases*, January, 1908) summarizes the skin lesions of congenital syphilis as follows:

- (1) Appearance of eruption at about the age of four weeks to eight weeks.

(2) Eruption consisting of disc-like coppery red macules, maculo-papules, or rarely bullous or crusted.

(3) The eruption situated about the genitals, buttocks, thighs and often around the mouth, and on the palms and soles, and invading flexures and convex surfaces alike.

(4) Other signs of syphilis: The child begins to lose its plump and healthy appearance, the skin becoming opaque and muddy looking, snuffles, hoarse cry, fissure of lips, iritis (rarely), enlarged testicle (rarely).

The "syphilitic wig," and "old man appearance" are not characteristic signs of syphilis, but may be seen in any condition of malnutrition.

Osteo chondritis is one of the most important and characteristic lesions for congenital syphilis. It is most frequently observed on the lower epiphysis of the femur and on the same point of the tibia, also the radius ulna and fibula; least involved of all is the humerus.

Wegner distinguished three stages in the development of osteo chondritis:

(1) Zone of calcification is of cartilage broadened and irregular.

(2) Formation: The rows of cartilage of epiphyses are actively growing—the layer is 4 mm. broad.

(3) The production of a layer of abnormal width of irregular, or serrated boundary lines and of a grayish yellow or grayish white color. The condition at the inception is capable of microscopic, not macroscopic, demonstration. At the completion it is visible to the naked eye. A separation of the epiphysis in the long hollow bones is not of infrequent occurrence.

Necrosis and caries of bone occur, particularly if the syphilitic process attacks the jaws and the nose and at the same time the mucous membrane.

Perforation of the hard palate, disease of the nasal bones, with production of saddle nose, are changes which are characteristic for congenital syphilis.

Parrot has described caries and perforation of the skull bones with subsequent meningitis.

Recently Pommer described the effect of congenital syphilis on skull bones. He showed the infrequency of this variety of necrosis and also the lack of thorough microscopical study of this condition.

Other varieties of bone involvement in congenital syphilis may be mentioned:

(1) Diffuse rarification of bones (osteoporosis) leading to fragility, spontaneous fractures and infractions, the long bones and clavicle most commonly affected.

(2) Gummata of bone are rare during first stage of disease.

(3) Retardation of bone growth on account of premature ossification of epiphysis.

(4) Gummata of bones and periostium, or of soft parts, with extension to bones.

(5) Slowly progressing ostitis of long bones, particularly the tibia, most-often bilateral.

Hydrocephalous: Is not an infrequent manifestation of congenital syphilis. This has been attested to by the older writers. It probably depends on the occurrence of a leptomeningitis, possibly in some instances due to both lepto- and pachymeningitis. Hydrocephalus may be the only sign of congenital syphilis.

Rachitis: The causal relation of congenital syphilis to rickets has been for a long time under discussion. Parrot thought that congenital syphilis produced rachitic changes. Lees and Barlow considered cranio-tabes of syphilitic origin. Comby and Kassowitz seem to strike the key-note by saying that syphilis does not produce rickets, but that the resistance of the organism is so much lowered by the syphilis that the infant falls an easy prey to rickets. Rickets occurs at an earlier period and runs a more rapid course than under non-syphilitic conditions. Hochsinger, among others, believes that congenital lues predisposes the infant to rachitis.

Affection of Joints. The joint affections which belong to the early period of congenital syphilis are never primary in nature, but are associated with other bone disease, particularly the syphilitic osteochondritis. Serous effusions and defects of the cartilage are most frequently observed. Suppurative conditions of the joints sometimes occur as a result of congenital lues. The joints most commonly affected are elbow, wrist-joint and shoulder. The affection may be symmetrical and multiple in character. It has been suggested that the suppurative joint affections are pyemic in nature and depend upon mixed infections.

Muscles. Muscle changes in congenital syphilis are, for the most part, of rare occurrence. The lesions of the sterno-cleido-mastoid usually consist of hemorrhage into the muscle and are traumatic in origin. Kassowitz pointed out that the lesions in the muscles which were supposed to consist of a gummatous degeneration, were really caused by an extension from the periosteum, and histological examination by Hochsinger showed the muscular affection to be a myositis, not a gummatous degeneration.

The Heart. The changes which are observed in the heart may occur shortly after birth, or even during foetal life. The pathological changes are similar to those which are characteristic for the tertiary stage of the acquired variety. Vascular changes are the most marked lesions in both varieties. In both varieties, circumscribed gummata are characteristic, though interstitial myocarditis may occur.

Hektoen demonstrated interstitial myocarditis in an infant six weeks of age. Carpenter believes that congenital syphilis may be a cause of congenital heart disease; and he believes that herein lies an explanation of some cases of foetal carditis and foetal endocarditis. Fatty degeneration of the heart has been observed in a new-born infant who died of congenital syphilis. The affections of the pericardium are very rare.

The Blood Vessels. The changes in the vascular wall in congenital lues consist of a thickening of the muscular coat and adventitia. This applies particularly to the smaller vessels; the large arterial and venous trunks are for the most part unaffected, according to Hochsinger. The intima, during the early stages of the disease, at least, is for the most part normal. Small hemorrhages are noted about those vessels that are most affected. This is most particularly noted in the small vessels of the kidneys, where the vessels are surrounded by small hemorrhages and small cell infiltration. This is also noticed in the liver and muscles. Mracek described a condition which he called "syphilis hemorrhagica neonatorum." He believes that a certain percentage of hemorrhages of the new-born (not all of them) depend upon vascular changes of syphilitic origin.

The Lungs. The lesions of the lungs in congenital syphilis are of great interest. The disease presents itself in two forms—a diffuse inflammatory condition and a circumscribed one. The latter presents itself as gummatous nodules through the lungs. Gummata may appear of considerable size and may show retrogressive changes. Softening of a gumma may occur with cavity formation. Diffuse fibroid inflammation of the lung in congenital syphilis was first described by Virchow, under the name of "white hepatization."

Histological examinations show that there is a great increase of desquamated epithelial cells and a thickening of connective tissue. The inflammation is particularly marked in the region of the vessels and bronchi.

This condition is often spoken of as white pneumonia. The desquamated epithelial cells usually show fatty degeneration.

The lung so affected is very large and shows on its surface the impression made by the ribs, is difficult to inflate and the cut surface shows a white, or grayish white, or whitish red, mottled color. This form is the genuine white pneumonia and children suffering from this lesion are not viable.

The other form of interstitial pneumonia occurring in this disease is brought about by an increase of the inter-alveolar and inter-lobular connective tissue. Most of this connective tissue has its origin from the vessels and bronchi. On account of this increase of connective tissue, the alveoli are compressed. Such a lung is large, pale, grayish red, dense, but contains air. The capillaries are widened and increased. The alveolar epithelial cells are swollen and desquamated and sometimes pigmented. This pneumonia may begin during intra-uterine life. If it has advanced to a considerable degree, the infant cannot live. Both forms, the white and interstitial pneumonia may occur combined. It must be remarked in passing that all authorities are not agreed that the two varieties of pneumonia should be classified as given above, though the latest and probably best opinion favors the view that the two forms of pneumonia may occur under conditions that have been stated.

A genuine congenital syphilitic pneumonia does not occur after the first days of life. These pneumonias present a high mortality and present no physical signs which lead to their recognition during life.

The Mucous Membrane of the Nose. While the catarrh of the mucous membrane of the nose, the so-called syphilitic coryza, is a constant and characteristic clinical symptom and important from the diagnostic standpoint, anatomically the condition is characterized by a diffuse swelling of the mucosa and with a discharge of a bloody, thick, purulent secretion.

Hochsinger, who agrees that there is a diffuse hyperplastic inflammatory condition at the onset, recalls, however, that the process may lead later on to suppuration, erosions, ulceration of the cartilage, and deformity of the nose.

Gastro-intestinal Tract. Congenital syphilitic lesions of the gastro-intestinal tract are rare. In the stomach, diffuse infiltrations and circumscribed gummatous formations have been described in very young infants. In cases where the stomach is involved, the small intestine is also usually affected; in the large intestine, gummatous nodules, diffuse infiltrations and ulcers may occur.

The Liver. The liver is very frequently affected; as previously described in referring to other organs, the inflammation is either diffuse or circumscribed. In six autopsies, performed by Hochsinger, no case of ascites, or icterus, occurred. The absence of the latter is thought to be diagnostic for the liver of congenital syphilis. Diffuse infiltration, intercellular hepatitis, similar to the process in other organs, is the common mode of attack. In the less marked forms, it appears as a slight leucocytal infiltration of the portal canals, or giving rise to a pronounced fibrocellular invasion of these channels, leading ultimately to the destruction of the liver cells.

The vascular walls are infiltrated. Accompanying this, there may be naked eye gummata, even as small as a millet seed, or microscopical gummata, and these may be disseminated throughout the organ. Gummata of the liver which are visible to the naked eye are rare in children.

The Nervous System. There is little to be said anatomically about the lesions produced in the nervous system by congenital syphilis. The meninges are perhaps the most important tissues to be described. As an example may be cited a case of Carr's, exhibited before the London Pathological Society, which showed gelatinous masses under the dura and a serous pachymeningitis was present.

The brain itself was atrophic and showed sclerotic foci. Carr pointed out at the same time how the various meningeal and brain affections of congenital syphilis might lead to idiocy. Another case frequently referred to is that of Kahn's, where a syphilitic child fell sick with suppurative meningitis, secondary to caries and perforation of the frontal bone. Such meningeal infections are not especially peculiar to congenital syphilis.

Pachymeningitis hemorrhagica has been frequently referred to. The vascular changes in the brain, like those of acquired syphilis, though

occurring more rarely in the congenital form, have been frequently enough encountered. Encephalitis and atrophy of individual areas are recorded in numerous autopsies. Kahler and Pick have described circumscribed endarteritis in a five months old child. Zappert found meningitis of the cervical cord with degeneration of the anterior roots.

The Kidney. The older dictum was that the kidneys were for the most part normal in congenital syphilis. This, however, as has been shown by more recent observations, is incorrect. It is true that gummata have been found very seldom, though diffuse interstitial inflammation of the kidney has been questioned as a genuine complication of acquired syphilis, there should be no doubt that it is a genuine complication of the congenital variety. Heller, who examined thirteen congenitally syphilitic new-born babies, found that the kidneys were always involved. He found a diffuse interstitial nephritis, arteritis obliterans and glomerular nephritis, with hyperplasia of the epithelium, or atrophy. These findings have been corroborated by many other investigators. Hecker found that the kidneys were more frequently the seat of inflammatory changes than the liver.

The Testicle. The testicle is frequently involved in congenital syphilis. Here again we have the two forms. The gummatous variety occurs particularly in older children. The diffuse, interstitial form is the more frequent. Carpenter has the following to say with reference to syphilis of the testicle: "All parts of the organ may be attacked, and even the cord may feel thickened. Hydrocele is not an infrequent complication. The left testicle is usually the larger of the two. When the organ is enlarged, no difficulty is experienced in the diagnosis of the condition. In some cases, no enlargement occurs and then the chances of arriving at a wrong conclusion are by no means small, because it is very difficult to secure and test for fluctuation in so small and elusive a body as the infantile testicle. But if there be cirrhosis of the organ, and if there be no associated hydrocele to hamper the examination, one feels the organ of abnormal tension and hardness, which may be compared to that of scirrhus. On the other hand, the organ may enlarge to the size of a filbert, chestnut, plum or even an egg. It may be stated as a general fact that a diseased testicle in the early period of life is more likely to be syphilitic than tuberculous. Certain cases of infantilism and mal-development of the organ are probably due to syphilitic orchitis.

Spleen. Enlargement of the spleen has been regarded as a pretty constant finding. Some of the later observers have found that the spleen is not so frequently enlarged as was commonly believed. For instance, Mueller believes that the spleen is enlarged in only half the cases. Microscopically, the most frequent finding is a small cell infiltration of the medium sized vessels, arteries as well as veins. These findings are most pronounced in the still-born children. The gummata are very rarely found in the spleen.

The Thymus. This organ plays a more important part in congenital syphilis than in acquired. Fibrous induration of the thymus has been frequently reported and gummata have been rarely described. A peculiar manifestation in the thymus occurs, which is supposed to be characteristic of congenital lues. This consists of the formation of small multiple abscesses which contain a purulent-like secretion. They probably are of intra-uterine origin and have been supposed to be broken down gummata. Chiari thinks that in many cases these so-called abscesses are cysts and that they show no changes characteristic of syphilis. The fact, however, that these so-called abscesses are found in undoubtedly syphilitic children leads us to believe that they depend in some way on a luetic degeneration.

Referring to the statistics of Castens, who examined 791 cases of congenital lues, it was found that the liver was involved 597 times, the bones 496 times, the lungs 408 times and the spleen 384 times. A considerable gap occurred at this point, showing the kidneys to be involved 150 times, the pancreas 93 times, the brain 72 times and the female genital organs, muscles and intestinal tract each once. Referring to the inflammatory processes, Castens found 671 instances of interstitial and 38 instances of gummatous inflammation, thus showing that interstitial inflammation is the typical pathological change in congenital syphilis. Particularly characteristic of the syphilitic processes of the new-born infant is the fact that the changes in the various tissues and organs proceed from vascular degenerations. This is borne out by all of the histological and statistical studies.

REPORT OF SOME CASES OF LUPUS ERYTHEMATOSUS.*

By M. F. ENSMAN, M. D., and W. H. MOOK, M. D., of St. Louis.

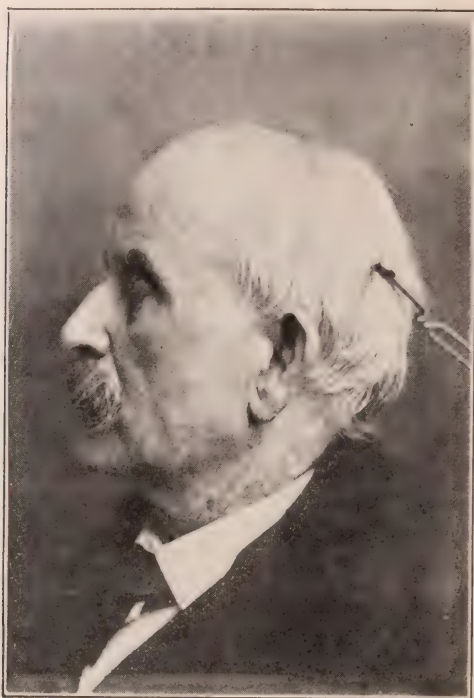
The following cases of lupus erythematosus are reported to illustrate some of the many unique phases of the disease. Several English writers look upon lupus erythematosus as a process which frequently follows a preceding chronic inflammation in an individual with an enfeebled circulation. The position of this class of writers is very concisely stated by Wilfred Ward, who, in a study of lupus erythematosus, maintains that the disease is not a pathological entity, but a step in a pathological ladder, with a feeble circulation and unsound blood-vessels on one end, a permanent edema, degeneration and atrophy on the other. He believes that this edema and vascular degeneration depend upon: "(a) Indirectly, on a feeble circulation, leading to a state of malnutrition of the vessel walls; on the strain placed on the vessels by flushing; on anatomical peculiarities, and many other known and unknown causes. (b) Directly, on exposure to heat and cold; injuries, such as burns; on the presence in the skin of various efflorescences due to poisons; certain fevers (toxic); microbic activity; and to other known and unknown causes."

Galloway and MacLeod¹ in a study on "Erythema Multiforme and Lupus Erythematosus: Their Relationship to General Toxæmia," concluded from the cases studied that clinical and histological differences were rather those of a degree in a common process than of a totally different type.

Fordyce and Holden² aptly illustrate the idea. They say that the supervention of the disease on local injury to the tissues, as in a case of frost-bite, sunburn, etc., and on previous affections of the skin, like seborrhœic dermatitis, suggests that a purely local cause may at times be responsible for its occurrence.

CASE I. FIG. I. LUPUS ERYTHEMATOSUS ASSOCIATED WITH RAYNAUD'S DISEASE AND PSORIASIS. D. P. McC., age 68, applied for treatment in November, 1905, for an eruption scattered over his face and head, which had begun twelve years ago. The eruption was distributed over the nose, sides of cheeks and on scalp. On each cheek and spreading over the ears were large, scaly, red patches containing atrophic areas. The centers of these patches were redder than the periphery. Over the scalp were disseminated lesions varying in size from a dime to a dollar, and in all respects similar in character to those on the face. The patient remained in the hospital for some weeks without marked improvement. Two years afterward he again appeared, suffering from a general eruption which had begun two months previously. Upon examination the eruption was found to involve the entire body and typical in every

*From St. Louis Skin and Cancer Hospital.



Case I. Fig. 1.



Case I. Fig. 2.

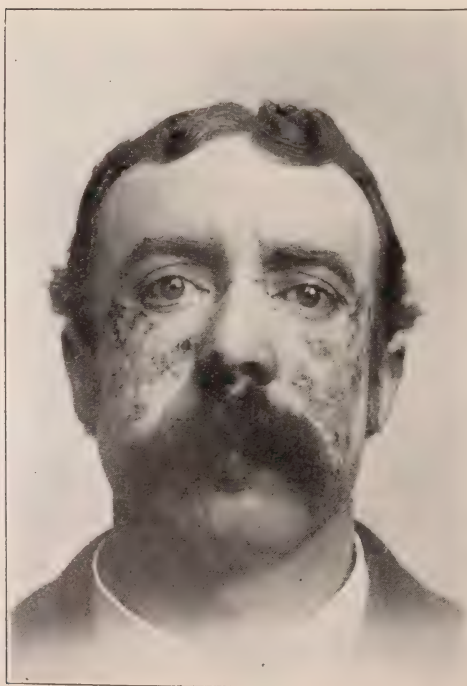
feature of an eczema seborrhœicum psoriasiformis. The patches were gyrate and covered by greasy, yellow scales. As this eruption did not reply to treatment as readily as such cases usually do, and as some rather atypical features presented themselves, parapsoriasis lichenoides (Jadassohn) was thought of, but abandoned as its further course did not substantiate this position.

Upon the patient's second visit to the hospital a bandaged foot was noticed which upon inquiry revealed the fact that a very interesting condition was going on there, the history of which is as follows: Three years ago, while running down stairs, the patient stumbled and sprained the foot; from this he recovered quickly, but two months later a second accident of the same nature occurred. From that date the part was tender, swollen, and difficult to walk upon. Finally, in a month or so, the first, second and fifth toes turned a bluish-black color, and was pronounced by the attending physician to be a "frost bite." No operation was performed. In the course of three months these toes amputated themselves by a slow process of dry gangrene, without pain, ulceration, or marked inflammatory symptoms. Later the last phalanx of the third toe began to show the bluish-purple color, which gradually spread down the toe to the foot, when the fourth toe also underwent a like change. On entering the hospital at this time the foot, from just anterior to the instep forward, had a mottled bluish-purple color and was clammy to the touch. There was slight edema, but not marked inflammatory symptoms. The first, second and fifth toes were missing. The third toe was swollen, club-shaped and of a deeper purple than the foot. At the junction of the third and second phalanx was a small ulcer of a cratiform shape, indolent and painless. The fourth toe presented no ulceration but was congested in appearance (Fig. II). After some weeks of treatment with various local and internal remedies, including active antisiphilic medication, there was no improvement. Amputation was recommended, therefore, and performed. The wounds healed kindly and the patient has to date had no further trouble of this character. The right foot was never affected.

This case is strikingly interesting and unique as it presents in one individual, at the same time, three cutaneous conditions, namely: psoriasis, lupus erythematosus, and a peculiar disturbance, undoubtedly of vascular origin, of one of the extremities. Pringle³ and Cox⁴ both report a case in which there was an association of Raynaud's phenomena with lupus erythematosus. Whether the gangrenous phenomena in our case can be placed with what is termed Raynaud's phenomena is a question. We have, however, so called it, as we feel that we can, as others have done, take this liberty. It is interesting here to note and to dwell, in thought, over the most excellent work of Corlett and Schultz⁵ who found that the symptoms of parapsoriasis were due primarily to vascular changes, which may occur in other organs than the skin. They cite the case of C. J. White,⁶ in which there was an obliterative arteritis of the



Case III. Fig. 3.



Case IV. Fig. 4.

arterioles associated with parapsoriasis, in which gangrene of a toe occurred.

CASE II. LUPUS ERYTHEMATOSUS AND PSORIASIS. Thomas C., aged 25, applied at the Skin and Cancer Hospital, February 10, 1908. Family history of no consequence. No tuberculosis. His skin trouble began on the right cheek under eye, as a red spot, with no subjective symptoms. The lesion soon became scaly and grew rapidly in size. These characteristics had never changed, except to extend peripherally. In a few months a second similar lesion appeared on the left cheek under the eye, but did not enlarge. This winter he applied court plaster to the lesion on the right cheek and it became red and irritated. Last September he noticed red, scaly plaques appearing on the right side of his chest; similar ones soon appeared over the body, arms, thighs and scalp. The eruption over these areas was that of a typical psoriasis. On the right and left eyebrow there was a typical lupus erythematosus, consisting of patches with raised border and atrophic areas. The patient did not return for further treatment.

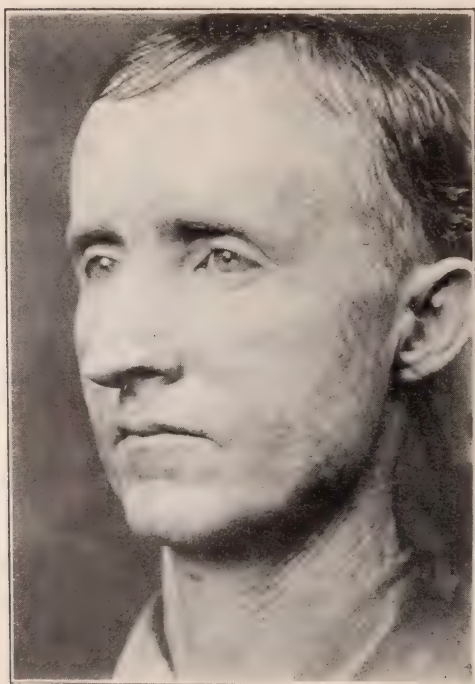
CASE III. LUPUS ERYTHEMATOSUS AND DERMATITIS VEVENATA. L. M. F., male, aged 28 (Fig. III). Patient had been in good health previous to his present trouble, which began without premonitory symptoms nineteen months ago as an eruption over the face, body, arms, legs, and neck. He was at the time in the country where he had been picking berries for a week previously. The eruption had been diagnosed "poison ivy." It consisted of "water blisters," thickly scattered over the areas mentioned and was exceedingly pruritic. There was no accompanying constitutional symptoms and the eruption quickly disappeared under treatment, except a small spot of redness on each ear and the bridge of the nose. These the patient distinctly asserts were the starting points of his present trouble. Some months later similar spots to those on the ears and nose appeared on both cheeks. Still later, the backs of both hands became involved.

The patient was treated for lupus erythematosus by competent men without apparent improvement, when he consulted Dr. Hartwell Lyon, who, on account of the peculiar grouping and flat papular character of the lesions, especially those on the hand, put him upon mercurial injections, hoping that the case was one of the peculiar lupus erythematosus-like syphilides. This treatment produced marked improvement for a while, the lesions on the hands rapidly disappearing and those on the face became flatter and of a pinker hue. The improvement, however, seemed to cease at a certain point and therefore Dr. Lyon kindly asked us to attend to the case for him. It must be said in regard to the apparent improvement from the mercurial injections that the patient sagely states that he has been almost well several times and that an era of improvement had begun just before the treatment.

CASE IV. LUPUS ERYTHEMATOIDES (Fig. IV). O. W., aged 38, male. This patient was affected with a type of disease which was called by



Case V. Fig. 5.



Case VI. Fig. 6.

Leloir, lupus erythematoïdes. The disease began twenty-eight years previously and it now shows the typical butterfly formation over the nose and cheeks. The picture displays the deep cicatricial tissue and the absolute symmetry of the involvement. The case is reported here to show the difficulty of diagnosis between this form of lupus erythematosus and certain types of syphilis, especially those involving the flush or seborrhœic areas of the face, as is shown by the following case.

CASE V. ERYTHEMATO-SQUAMOUS SYPHILIDE (Fig. V). Mrs. H., aged 60. The patient denies all history of syphilis and says that her present trouble began nine months ago with an erysipelas of the face and scalp. The picture here submitted shows the remains of the disease after a cure by antisyphilitic treatment. When she appeared the case was diagnosed as lupus erythematoïdes, as the patient was an old woman, the eruption absolutely symmetrical and was scattered over the areas usually favored by that disease. The crusting was of that of a lupus erythematoïdes, as was also the intervening erythema and scar formation; although one must admit that the latter was deeper than that usually seen. She was treated by the x -ray and other methods without success, when finally the depth of the crusts of one or two lesions suggested lues. After a short course of antiluetic treatment marked improvement supervened and finally the whole process rapidly disappeared under its continuation.

Syphilis is an imitator of all diseases. Comparing Case IV with Case V, one can readily see the similarity of distribution, scar formation and general appearance of the lesions. Case IV did not reply to prolonged specific medication but improved rapidly under the x -ray.

CASE VI. LUPUS ERYTHEMATOSUS, EXTREMELY SUPERFICIAL. C. D., aged 39, sailor. The peculiar type of this case is well shown in the illustration (Fig. VI). It consisted of a roughened skin, more like a very mild and superficial seborrhœic dermatitis, as upon casual inspection a peculiar redness of gyrate character could be observed covering the front and sides of the face, neck and upper half of the ears. This redness was toned down by superficial, fine, branny scales, very adherent. Upon close inspection in a good light, one was startled to realize that he was looking at quite another affection than that of a simple superficial seborrhœic dermatitis. As his eye picked out a few minute punctate scars, there suddenly appeared before his vision myriads of them, just about the mouths of the patulous follicles, and, furthermore, it could be seen that these little gaping depressions were caused by an exceedingly superficial atrophy of the skin in these areas. Then the skin appeared to one as being of a grayish pink and not so erythematous as it did at a distance. The peculiar impression conveyed to one by the study of this case was similar to that produced when viewing one of Whistler's masterpieces, in which only a harbor light is at first dimly seen although further observation brings out boats and lights and shadows and a forest of masts.

That there was a slow chronic process still going on in this case was evidenced by a pruritis and the pinkish-red appearance of the skin. When at sea the wind and weather irritated the eruption markedly so as to cause some exacerbation in the form of small crusts. A piece cut from the side of the neck upon microscopical examination showed the type of chronic inflammatory changes usually seen in lupus erythematosus and described by various authors. There was nothing unique in this case, except the degree of inflammation and its slow and mild type.

Lupus erythematosus expresses, if any disease of the skin does so, some constitutional derangement. This is, of course, most marked and spectacular in the acute fulminating, disseminated types of the disease, which show, coincidentally, signs of visceral involvement. These cases present the picture of some constitutional toxic syndrome in its albuminuria, fever, rigors, etc., and are somewhat similar, it must be said, to severe types of the "erythema group" of Osler. In these incidents we may have a very striking analogous chain of symptoms in its erythematous lesions, the involvement of the mucous membranes and visceral complications. Pernet⁷ graphically and very thoroughly discusses the phases of these types in his late study.

Lupus erythematosus remains at present as it has in the past, a mystery, illusive in its etiology and too often disappointing in its therapy. The modern study of the disease undoubtedly points to some constitutional derangement or toxemia as its cause. This may be, however, in many cases only of a predisposing nature and the fixing of a chronic inflammatory process called lupus erythematosus may necessitate an external or exciting factor, like an erysipelas, burn, trauma, frost-bite, exposure to heat, sun, wind; or an inflammatory disease of which eczema may be taken as a type.

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PRIMARY ABSCESES OF THE ABDOMINAL WALL.

By MAX W. MYER, M. D., of St. Louis.

Most of the recorded cases of primary abscesses of the abdominal wall are to be found in the French literature. The American text-books mention the possibility of such lesions, but have little to say of the etiology and diagnosis. Munro, in the recent edition of Keen's Surgery, considers these abscesses of more than ordinary interest. According to him the anatomical arrangement of the muscles, fascia and peritoneum afford difficulties in diagnosis and often require some ingenuity to relieve the condition and still preserve a strong abdominal wall. The following two cases present very different clinical pictures:

Case 1. Mrs. K., 43 years of age, was admitted to the Parker Hospital at Columbia, Mo., on May 20, 1907. Family history negative. About five weeks ago, during a severe vomiting spell, the patient developed pain in the right inguinal region. A short time after this a small tumor, size of a walnut, was noted. Since this time there has been more or less constant pain in this region. For the past two weeks, the tumor has increased in size and has become more painful. A slight fever was noted for some days and has become more pronounced during the past week, reaching 102°. Patient was confined to her bed on account of the pain when she attempted to walk.

Examination revealed a fluctuating tumor mass about the size of a child's fist and located in the hypogastric region. This extends a very little to the left of the median line, the greater part of the tumor being on the right side. No relation with the inguinal canal exists. The mass possesses no mobility other than that of the abdominal wall. The skin is movable over the tumor and is not discolored. Tympany on deep percussion.

Vaginal examination negative.

Diagnosis. Abscess of the abdominal wall.

Operation. Local anesthetic. Incision and drainage. Abscess was in the right rectus muscle and seemed to be burrowing toward the median line. Remnants of broken down blood clots escape with the pus.

Tubercle bacilli could not be found in the pus.

Case 2. Mrs. S., 25 years of age, entered the hospital September 18, '07. Has two children. The younger is one year old and had been nursing up to the time the patient was admitted to the hospital. Previous history bears no relation to the present trouble.

About one month ago patient claimed to have noticed a sore area in the region of the present tumor mass. This became very pronounced and the patient entered a hospital, but was dismissed without relief. It

is impossible to get any history as to the length of time the present tumor has existed. The pain has been more severe of late and the pressure of clothes is very painful. Fever was recorded upon admission to the hospital, but the patient does not know how long this has existed. She denies any trauma.

The examination of the abdomen reveals a tumor in the epigastrium. This mass is about two fingers breadth below the xiphoid cartilage and extends to within two fingers breadth of the umbilicus. It is soft, fluctuates, and is about the size of a man's fist. It occupies the median line, extending about three fingers' breadth to either side. The mass is extremely sensitive and has no mobility other than that of the abdominal wall with respiration. The skin is only slightly movable over the tumor, but is not discolored. Owing to the extreme sensitiveness, it was not possible to percuss over the mass. The fingers can be pressed under the tumor, excluding any connection with the abdominal cavity.

Diagnosis. Abdominal wall abscess.

Operation. Local anesthesia. Incision and drainage. The abscess was in the deeper layers of the recti muscles and seemed to burrow toward the peritoneum. The manipulations had to be carried out cautiously for fear of entering the peritoneal cavity.

Bacteriological examination revealed the *Staphylococcus Aureus* of Rosenbach.

The chief interest in these cases centers in the etiology and some possible difficulties in diagnosis. Contusions are mentioned in all textbooks as the usual cause of abdominal abscesses. Bottomley discusses in an excellent article the similarity of early symptoms in abdominal contusion and intestinal injury. These difficulties exist chiefly in the very early stage, before a local abscess has had time to develop. Alexandroff reports a case with an enormous abscess between the parietal peritoneum and muscle, following such a trauma. Burrell has recorded a case in which a diagnosis of appendiceal abscess was made and at operation it proved to be an abdominal wall abscess secondary to contusion.

Rupture of a vessel in the abdominal wall, with the formation of a hematoma and secondary infection, is also a comparatively infrequent etiological factor. The first case recorded in this paper seems to belong to this class. Rupture of the inferior epigastric due to a violent straining, with hematoma formation and secondary infection, seems the most likely cause. Hoffman also describes such a case, due to rupture of the left inferior epigastric artery in a soldier, following a fall from a horse.

The second case does not offer a clear etiology. All the previously mentioned causes may be excluded. Infection from a hypodermic needle or from a surgical operation could not be elicited in the history. Mention is made, especially in the older literature, of an infection of the abdominal wall from adherent viscera. A stercoraceous odor of the pus seems to have been the chief point upon which the diagnosis was

based. This is probably a remnant of the days when intra-abdominal abscesses, especially appendiceal, were not treated surgically. The bacteriological examination would seem to exclude such a diagnosis in this case.

The escape of foreign bodies from the viscera into the abdominal wall with secondary abscess formation has been observed, but can be excluded in this case. Secondary infection from a necrotic rib would also have to be considered with abscesses in this region.

An intramural infection of the oblique or recti muscles of obscure origin has been observed. These cases may possibly be secondary to a mild trauma, which has passed unnoticed by the patient. At least no other cause can be assigned for them and such seems to be the explanation of the one case described. Munro has observed how the more insidious of this type of abscess produce marked symptoms of a general infection with local signs that suggest peritoneal infection, even to the nausea and vomiting. This would naturally depend upon the layers of the abdominal wall involved. With the infection between the muscle and peritoneum, as in the case described, such symptoms might readily develop.

The difficulties in diagnosis occur chiefly from the location of the abscess in the abdominal wall. Most cases can readily be differentiated from intra-abdominal lesions and especially after the acute symptoms have subsided.

In the lower half of the abdomen, hernia must always be differentiated. Abscesses, too, occur in this region extending from osteomyelitis of the vertebra or pelvic bones, from appendicitis or an infection of the pelvic genito-urinary tract. In the upper half must be differentiated the subphrenic or perirenal abscesses, osteomyelitis of the ribs or an infected urachus.

The extent of destruction of such an abscess will depend entirely upon the layer of the abdominal wall involved. Superficial fat necrosis would produce a very insignificant lesion, while those cases involving the muscle layers may cause extensive destruction of both muscle and fascia. The muscle infections do not seem to be controlled by the limiting fascia to the extent which might be expected. Those cases in the loose tissue between the peritoneum and transversalis fascia are always quite extensive before being recognized and might readily lead to a peritonitis.

The treatment of these lesions consists in a free incision and drainage, with a careful search for some overlooked primary focus. Where extensive destruction of muscle and fascia has occurred, a weak abdominal wall is the result. These cases often have to be repaired by extensive surgical operations or by the use of a filagree. It is possible that a small incision, followed by Bier's cupping, might prevent such extensive destruction. If a wrong diagnosis has been made and an abscess secondary to a tuberculous process has been opened, leaving a fistula, Beck's bismuth paste might be tried.

MEDICAL AND SURGICAL PROGRESS.

THE INDICATIONS FOR ABDOMINAL CESAEREAN SECTION.

A CRITICAL REVIEW.

By HUGO EHRENFEST, M. D., of St. Louis, Mo.

In the English translation of Mauriceau's "Diseases of Woman with Child," published in 1683, we find the following reference to Cesarean section: "When a big-bellied Woman is effectively in Labor, 'tis very rare but that an expert Chirurgion can deliver the child dead or alive, whole or in pieces * * * *, without being necessitated in a very inhuman, cruel and barbarous manner to have recourse to the Cæsarean Operation during the Mother's Life, as some Authors have too inconsiderately ordered, and sometimes practised themselves."

"I do highly commend Guillemeau, who to disabuse the World for such a wicked and pernicious Practice, confesseth, speaking of this operation, and owns (by way of repentence) that he did himself twice in the presence of Ambrose Pareé put it into practice, and saw it thrice done more by three several very expert Chirurgions, who omitted never a circumstance to make it succeed well, and notwithstanding all, the Women died."

"As for Pareé, he will not acknowledge that he saw those two operations of Guillemeau, because he will not have Posterity know that he was able to consent to so great a Cruelty; but contents himself advising only, that it never should be undertaken till the Woman is dead."

In 1908 Newell¹ in an interesting article entitled "Overcivilization and Maternity" says: "The overcivilized woman often comes to labor in a condition physically unfit to withstand any serious strain. The patient is not only to be delivered alive, with a living child, but is to be brought through in such nervous and physical condition that she will be able to assume the functions and duties properly belonging to her after convalescence. If such a patient will probably go through labor badly, immediate delivery must be undertaken, no matter what the stage of labor, at the first indication of unfavorable signs. In the case of an elderly primipara with rigid soft parts Cesarean section beyond any question will give the best results."

225 years lie between these two opinions concerning the value of abdominal hysterotomy as an obstetric operation. This fact seemed interesting enough to me to ascertain the different factors which gradually led to such an extension of its field of usefulness, that at present it includes such conditions as placenta previa, eclampsia prolapse of the cord and the ill-equipment of old primigravidae for labor.

In 1751 Smellie defined the indications for Cesarean section as follows: "When a woman cannot be delivered by any of the methods hitherto described and recommended in laborious and preternatural

labours, on account of the narrowness or distortion of the pelvis into which it is sometimes impossible to introduce the hand, or from large excrescences and glandular swellings, that fill up the vagina and cannot be removed, or from large cicatrices in that part and at the os uteri which cannot be separated; in such emergencies, if the woman is strong and of a good habit of body, the Cesarean section is certainly advisable and ought to be performed, because the mother and child have no other chance to be saved, and it is better to have recourse to an operation which has sometimes succeeded, than leave them both to inevitable death." On the other hand, however, his noted German contemporary, Georg Wilhelm Stein, the inventor of the first pelvimeter, exhibits a striking enthusiasm for this operation, when he writes (in 1777): "Although a comparatively recent invention, Cesarean section must be given preference over embryotomy, and in our times this latter operation by rights should be abhorred and never be mentioned in any textbooks."

But this certainly does not express the views prevalent at that time. Boër, the famous obstetrician of the Vienna school, in 1793 (*Abhandlungen und Versuche geburtshilflichen Inhalts*. 3. Th., p. 47), held the opinion that the only justification for Cesarean section is found in a pelvis contracted to such an extent that the fetus cannot be removed from it either by resorting to excerebration, eventration or embryotomy. And he adds, not unlikely in alluding to the position of Stein: "It would seem that the readiness with which some authors suggest Cesarean section is not so much the product of a thorough acquaintance with facts, as the result of an unduly exaggerated interest in the welfare of the child, together with an inhuman and inexcusable indifference towards the life of the mother."

"But whenever they are called upon to do at the bedside with a knife, what they had advocated at the writing desk with the pen, they always reveal some change of mind and always demonstrate how useless their precepts and teachings are for practical execution."

As late as 1832 Maygrier (*Midwifery*, translated by A. S. Doane), was of the opinion that "Cesarean section totally differs from the other resources of the art, since it *cannot* be used *except* where the fetus cannot be born through the pelvis."

And even twenty years later, eighty years after Stein's ardent endorsement of Cesarean section, a report of the Vienna Maternity Hospital published in 1852 (*Klinik der Geburtshilfe und Gynaekologie*, p. 646), contains but one sentence relating to this operation: On account of its great danger Cesarean section is performed on the living only for an absolute indication, *i. e.*, if the fetus cannot be removed by *vias naturales* even in parts.

Within the next 15 or 20 years the results had improved so far that the operation seemed not any longer restricted to cases offering an absolute indication in its strict meaning. According to Naegele's textbook of obstetrics (edition of 1867, p. 392): "Cesarean section is justifiable if the pelvis does not permit the passage of the normally developed fetus." The operation, however, should be performed only if the obstetrician is convinced of the viability of the fetus and has obtained the consent of the patient for operation. "But this consent," the author adds, "will only rarely be obtained if the mother is given the choice between perforation and Cesarean section, after having been properly informed concerning the relative advantages and dangers of these two operations."

Gustav A. Braun (Compendium der Geburtshilfe. 1875, p. 515), precisely states the indications and contraindications as follows: The operation is permissible in cases with a true conjugate between 6, 5 and 8 cm., if the patient is willing to risk her life in spite of the possibility of extracting the dead or embryotomised fetus through the pelvic canal. Unjustifiable for relative indication is Cesarean section, if the mother refuses her consent; if she is insane; if she seems physically unfit to stand the operation; if she has other living children, it being her duty to save her life in their interest; if there is some doubt concerning the life or the viability of the fetus; if the fetus is malformed; if the patient is in a dying condition or in cases of twin pregnancy. And he concludes the enumeration of these many contraindications with the statement: "Thus there will be very few instances left in which Cesarean section can be performed for a relative indication."

At that time the mortality of the operation, while still high, had decreased to such an extent that the fetal life began to be regarded as a factor in the determination of the permissibility of Cesarean section in the individual case. Religious considerations also strongly favored the attempt to eliminate the necessity of perforation of the living child. Some authors, among them Osiander and Kilian, denied positively that the mother had any right to decide between Cesarean section and embryotomy on the living child.

The turning point came with the year 1882 when Kehrer and Saenger began to insist on a careful closure of the uterine wound by separate sutures of both the muscular portion and peritoneal covering of the uterine wall, and evolved an operation which to-day is known as the classic Cesarean section. It is interesting to note that the sudden and decided reduction in the mortality of this operation was not a result of the introduction of antisepsis and asepsis in surgical practice, but the result of an improvement in the technique by which that fatal leakage of lochial secretions into the peritoneal cavity was effectively prevented. Only a few years later in 1890 Grandin (quoted from Winckel's Handbuch der Geburtsh. 3. B. I. Th., p. 813), pronounced Cesarean section the simplest obstetric operation, which can be done by any surgeon without any knowledge of the anatomy. The only requirement is that he know how to close the uterine incision; and he can get that information by spending one minute in reading.

While not "the simplest obstetric operation,"—certainly not at that time,—Cesarean section undoubtedly had become safe enough to obviate in most instances the perforation of the living child, and it soon began to compete with premature artificial labor and prophylactic version in cases of a medium contraction of the pelvis. At first this step was suggested solely in the interest of the child whose chances obviously were lessened by its premature birth or the version and extraction; but of late an attempt has been made to prove that Cesarean section is even less dangerous to the mother than some of the operative procedures necessary to start labor prematurely.

The relative indications for Cesarean section primarily only pertained to cases in which an otherwise lost child could be positively saved. Some writers claimed that a relative Cesarean section with a dead child should be classed as failure and as late as 1901 Veit stated that Cesarean section for relative indications should not have any mortality. Certainly not, if performed solely in the interest of the fetus, but of late, as already stated, the meaning of the term "*relative indication*" has

changed, and also applies to conditions in which the delivery by means of Cesarean section is assumed to lessen the dangers to both mother and child. As appropriate illustration I may cite the history of the use of Cesarean section in the treatment of placenta previa. About 15 years ago this operation was suggested for the purpose of reducing the high maternal mortality. Soon the point was raised that in this way more is done for the child also, and Boyd and others advanced the possible improvement of the fetal chances as their strongest argument in favor of Cesarean section. Similar is the situation in the employment of Cesarean section in certain cases of eclampsia, a therapy which to-day is recommended by some of the best known obstetricians of the world. In eclampsia, however, the operation still is advised more in the interest of the mother. The premature detachment of the normally situated placenta is looked upon at present, also as an indication for Cesarean section (Lorier⁴). Furthermore we find in very recent literature reports of operations performed solely in the interest of the child, for reasons which a few years ago hardly could have been found in the most complete list of relative indications. Abuladze² made a Cesarean section in a case of prolapse of the umbilical cord and considered this the only method which is safe as far as the child is concerned. Last year another Russian obstetrician, Pekarskaja³ followed his example. In this case the pelvis was slightly contracted, the cord pulsating, and no other method of delivery, in the author's opinion, was equally promising to save the fetus. In a case recorded by Piispanen⁵ the patient in the five preceding pregnancies had gone to full term, the child dying in every instance with the beginning of labor. No cause could be ascertained. Therefore, the author performed successfully a Cesarean section ten days before the expected end of the sixth pregnancy. In a case of Wyder⁶ the contraction ring was found grasping the child's neck so tightly that no other means of delivery, safe for the child could be thought of. Grosse²⁰ reported to the Société d'obstétrique in Paris a case in which he successfully performed a conservative Cesarean section, because the uterus was in a continuous tetanic contraction, the slight dilation of the cervix remaining stationary. In the discussion following this paper Pinard approved Grosse's procedure.

We may next consider the recent changes in that group of indications which are known as the absolute indications for cases in which the fetus can not be removed in any other manner from the uterus. The older and at present abandoned methods of vaginofixation and ventrofixation have necessitated in many instances Cesarean sections in pregnancies following the operation. In many of these cases the external os of the cervix has been found drawn up so high that it was absolutely inaccessible, and Cesarean section was left as the only possible means of emptying the uterus. While the improved methods applied to-day to the correction of the malposed uterus will prevent this most undesirable after-effect of these operations, we still find in the literature reports of Cesarean sections necessitated in cases in which the uterus unintentionally had become firmly adherent to the abdominal wall, *c. g.*, after conservative myomectomy. Hubbard⁷ describes a case in which a very firm adhesion most probably was caused by an abscess forming after the extirpation of two fibroids from the anterior uterine wall. Brink⁸ found in a woman, pregnant for the fifth time, exactly the conditions seen in cases of exaggerated ventrofixation. Cesarean section had to be performed. During the preceding puerperium she had passed through some infectious

process and he assumes that as the result of an inflammation the posterior wall of the uterus had become adherent to the abdominal wall.

Tumors blocking the pelvic outlet or contractions of the vagina preventing the passage of the fetus, as has been shown above, already appear in Smellie's list as indications for Cesarean section. But to-day the tendency is growing to perform Cesarean section whenever the removal of the obstructing tumor calls for a laparotomy. Hohl, *c. g.*, insists that in all cases in which an ovarian cyst blocks the outlet during labor the uterus at once should be emptied by Cesarean section instead of leaving the expulsion of the fetus to nature after ovariectomy has been performed. There are now three cases on record (Hugenberger, Schauta and Saenger) in which Cesarean section had to be performed because a lithopedion prevented the passage of the fetus; in a case of Cragin a dislocated kidney was lying below the fetal head. In a case of Brown⁹ the non-gravid horn of a bicornuate uterus was pressed down into the cul-de-sac. Not entirely clear is a case reported by Brindeau and Pottet.¹⁰ In this instance the obstacle was a large stone in the bladder. The short abstract of the original paper, which to my knowledge has not yet appeared, does not give the details of the case, but it must be assumed that the stone either could not be reached from above or the authors did not wish to expose the patient to the risk of a natural labor soon after a vaginal lithotomy. The fear of fresh injury to a recently repaired vesico-vaginal fistula has to-day indeed become an indication for Cesarean section. Wechsberg¹¹ reported before the Vienna Gynecological Society a case in which impregnation occurred shortly after a large vesico-vaginal fistula had been closed after various difficult operations. He defended his right to perform Cesarean section under these conditions. Schauta supported the essayist in his position and mentioned the fact that he himself had performed this operation three times for the same reason. Routh¹² has collected from literature 30 cases of Cesarean hysterectomy performed for traumatic atresia of the vagina. In five of these cases extensive bladder injuries had been previously repaired. Three other cases belonging to this class have been recorded by Kedarnath;¹³ in two of them the patients had vesico-vaginal fistulas.

But vaginal obstructions of less importance are considered by some obstetricians to-day just indications for Cesarean section. Asch¹⁷ operated on a patient suffering from a nephritis, because the excessive swelling of the external genitalia prohibited intravaginal manipulations. Similar conditions we find in a case of Seiffart,¹⁸ but this patient, a girl 14 years old, had neither a kidney lesion nor a heart lesion. The external genitalia were enormously swollen, the edema extending up into the vagina so that only one finger could be introduced with difficulty. More justifiable seems a Cesarean section performed by Brunet¹⁹ for a rather unusual reason. The patient had extensive varicosities of the vagina and external genitalia. During an examination one of the varices in the vagina ruptured. A profuse hemorrhage was controlled by tight packing of the vagina, but even 48 hours later the hemorrhage reappeared with every attempt to remove the packing. Labor pains began. The question arose whether this exsanguinated primigravida with a small irregular pulse of 128 would be able to pass through physiologic labor. After careful deliberation a Cesarean section was decided upon and successfully performed. Statistics made by Wuellmer showed that out of 16 cases of extensive genital varicosities in pregnant women, 7 ended fatally. The combined statistics of Budin and Wuellmer

contain 18 cases in which such varices ruptured during pregnancy or labor; 16 of these patients died.

Rarer are the cases in which an absolutely unyielding cicatricial stenosis of the cervix necessitates Cesarean section. A case of this sort was recently described by Endelman.¹⁴ In Winkel's *Handbuch* only five cases are mentioned, obviously this figure does not include the instances in which the rigidity of the cervix is due to a carcinoma or another new growth. In French literature we often find reference to a syphilitic stenosis of the cervix, the final effect of a primary chancre located there. Proust and Pottet¹⁵ in such an instance had to perform a Porro operation. Pinard, Segond and Couvelaire¹⁶ have placed on record a case of Cesarean section in which the cervical stenosis was the result of intracervical cauterization.

While all the cases cited above can be classed as obstructions of the parturient canal,—not in the old meaning but in the modernized conception of this indication,—recent literature contains a few records of Cesarean sections performed for very unusual reasons. Gemmell²¹ had a patient suffering from a myasthenia gravis. She was in a condition of pitiful weakness and exhaustion, the slightest exertion producing alarming dyspnea. It was feared that if she would not succumb in the first stage of labor, attempts at the use of the secondary powers in the next would almost certainly bring on a fatal attack of dyspnea. Cesarean section was performed for this reason. The uninterrupted recovery was followed by a gradual improvement in the respiratory and myasthenic symptoms. In a patient of Martin²² five years before a large myoma had been removed from the uterus. At the beginning of labor symptoms of an acute intestinal occlusion developed. On opening the abdomen he found a loop of the small intestine together with mesentery so firmly adherent to the uterus that the latter was twisted around its long axis. The adhesions had to be severed with the knife and attempts to control the resulting hemorrhage failed because the uterine wall proved too soft for sutures. An immediate reduction in the size of the uterus seemed the only available means of checking the hemorrhage, and Cesarean section was, therefore, performed. Schauta²³ encountered in two cases large pus tubes at the normal end of pregnancy. Well acquainted with the imminent danger of rupture during labor he performed Cesarean section, in both instances with favorable result. In the one case, after excision of the uterine end of the tube, pus was seen to escape from the uterine wall and, therefore, the uterus was supravaginally extirpated.

But modern literature has added one more unique indication for Cesarean section, the constitutional ill-equipment of the overcivilized woman for physiologic labor.

Shall we accept this latest indication suggested and alluringly recommended by Reynolds²⁴ ²⁵ and Newell(?)¹. It is obvious that Cesarean section may be considered as a routine measure for dealing with this particular class of patients only in case this procedure does not entail a greater risk to these patients than physiologic labor. Fortunately we have no mortality figures for labor in badly equipped older primigravidæ, otherwise anyone skilled in the manipulation of statistics could easily prove, beyond a doubt, that anything short of Cesarean section at the present time would be unjustifiable. But there is another way of settling this question. By statistics Reynolds tries to prove that *primary Cesarean section, the operation decided upon and performed at the very*

beginning of labor or in advance of labor, is to-day probably comparable to the operation of appendicitis in the interval, or in other words, barring unavoidable accidents, has no mortality. Reynolds's inference seems to be that an operation without mortality can successfully compete with the probably drawn out labor in the case of an elderly primigravida with rigid soft parts, who possibly will go through labor badly. I deny the correctness of this deduction. The risks and dangers of an operation are not appropriately expressed by its mortality. Every operation has also a morbidity, and very correctly and rightly Reynolds emphasizes the high morbidity subsequent to certain intrapelvic obstetric operations, such as high forceps, version and extraction. But why does he not mention even one word concerning those most unwelcome after-effects of Cesarean sections? As a general proposition it certainly can not be claimed that a woman who has recovered from the immediate effects of a Cesarean section is a perfectly well woman. Abdominal herniæ are still seen subsequent to laparotomies. Ovi²⁶ only recently described an enormous eventration after a Cesarean section. The case recorded by von Guérard²⁷ should be properly considered by all those who attempt to prove that Cesarean section is a harmless operation. On this patient a Cesarean section was performed in 1900. The recovery was smooth except for a small fistula which was closed in 1902. A year later during the eighth month of pregnancy the upper portion of the abdominal scar suddenly broke open, and intestines protruded, while the patient was lifting a washtub. The intestines were replaced and the wound closed. In the same night labor began; the fetus finally had to be removed by means of a very difficult high forceps extraction. The placenta was adherent and had to be removed manually. At the time of the report the patient again was pregnant, seven months, showing considerable stretching of the scar. Later the abdominal hernia had to be operated on.

But it also is a well-known fact, amply discussed in literature but not mentioned in Reynolds's paper, that often during a subsequent pregnancy the scar in the uterine wall is dangerously stretched and at times actually ruptures. Couvelaire²⁸ described one of these cases and cited eight others from literature. He stated that the danger of rupture undoubtedly is greater than statistics based upon case reports would indicate. In many instances in which a second Cesarean section had been performed on the same patient the operators have ascertained the extreme thinness (as thin as paper!) of the old scar, 20 cases of this sort being cited alone by Leuwen. Couvelaire claims that every woman on whom a Cesarean section has been performed during the last few months of a succeeding pregnancy must be kept under very careful observation, and whenever possible, in a hospital. Meyer²⁹ in 1908 described two ruptures of section scars and brought the total number of cases on record to 13. But other cases have been reported since, *e. g.*, one by Schneider³⁰ in which a part of the placenta escaped through the tear into the abdominal cavity. The transverse fundal incision had been considered a reliable protection against subsequent rupture, but to my knowledge there are at least two cases of rupture of the Fritsch incision on record (Marbott³¹).

It is decidedly discouraging to read what Olshausen³² writes as the result of his personal experience with 118 sections. Every operator may have the misfortune of observing a uterine rupture after a Cesarean section, no matter what suture material he may have used,—good catgut, thread, silk or wire.

If Reynolds and Newell would explicitly state these and other possible sequelæ of Cesarean section, their argument of the comparatively negligible mortality from primary Cesarean section, in my belief, would lose much of its force. These questions, however, can not be settled merely by statistics. In a paper (*American Medicine*, January 11, 1902), in which I have attempted to prove the impropriety of advocating Cesarean section as a routine treatment for placenta previa centralis, I have pointed out the fallacy of simply comparing the mortality of Cesarean section with the mortality of placenta previa, as has been done by many authors. These writers, simply placing figure against figure, often did not consider most important factors, *e. g.*, that in many of those large European maternities, in which Cesarean section has a very low mortality, all infected cases and even those only suspected of being infected, because they had been examined by midwives, are considered unfit for conservative Cesarean section. The proper appreciation of this one factor alone would exclude practically all cases of placenta previa from Cesarean section.

In my opinion too commonly the mistake is made to generalize an indication which is solely based upon theoretical deductions from statistics which do not and can not take into consideration the various features of the individual case. It cannot be denied that in the case of an exsanguinated primigravida with a profuse hemorrhage from a placenta previa which completely covers a slightly dilated rigid os, Cesarean section is a safe and promising method of treatment both in the interest of the mother and the viable child, if the patient happens to be in a well-equipped maternity hospital. Success in such or similar cases, however, does not permit us broadly to proclaim Cesarean section as the only proper treatment of placenta previa, as actually has been done. Identical are the conditions in eclampsia. For certain selected cases Cesarean section undoubtedly seems the most appropriate therapeutic measure, but the indication for this operation must be made by an expert obstetrician and not by a surgeon. It must be conceded that under certain definite conditions, which can be properly weighed only by a very expert obstetrician, in a case of prolapsed cord, Cesarean section may become perfectly justifiable, but, of course, it would be folly to generalize prolapse of the umbilical cord as an indication for section. The old principle remains unchanged that an obstetric operation performed solely in the interest of the child must not unduly increase the risks to the mother, but these risks to-day, when asepsis more than any other factor decides the results of most major operations, to a large extent are dependent on a variety of external conditions which can not be described or enumerated in the form of rules and appended to indications. Appreciating these facts we can understand that under certain conditions a Cesarean operation may become feasible in dealing with a case of myasthenia gravis or of extensive varicosities of the vagina.

Reynolds very correctly states: "With the great activity which has been displayed in the development of the Cesarean section during the last few years, there seems to be considerable danger that the operation may be over-exploited in the next few years." In my opinion this danger is unduly increased if Reynolds attempts to prove the justifiability of Cesarean section on the constitutional ill-equipped old primigravida by quoting large statistics concerning the mortality of the primary section, because statistics are usually employed only in arguing a general proposition. Statistics are of very little value in arriving at a decision of the

merits of the individual case, and furthermore tempt toward generalization.

Cesarean section, performed for such unusual reasons as have been quoted in the preceding pages, will, however, be justifiable only when the indication for operation is established by an expert obstetrician, who alone can consider, properly and carefully, all the various features presenting themselves in the one individual case.

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MEDICAL AND SURGICAL ASPECTS OF GASTRO-ENTEROSTOMY.

A REVIEW OF RECENT LITERATURE.

By JESSE S. MYER, M. D.

1. MEDICAL ASPECT OF GASTROENTEROSTOMY BASED UPON 128 OPERATIONS AT MANCHESTER ROYAL INFIRMARY.—Leech (*Lancet*, September 19, 1908).
2. STUDY OF GASTRIC AND DUODENAL ULCERS WITH A SPECIAL REFERENCE TO SURGICAL CURE.—Mayo (*Surgery, Gynecology and Obstetrics*, Vol. 6, 1908).
3. LATE RESULTS (TWO YEARS OR MORE) AFTER OPERATIONS FOR BENIGN DISEASES OF THE STOMACH.—Moynihan (*Surgery, Gynecology and Obstetrics*, Vol. 6, 1908).
4. EXCLUSION OF THE PYLORUS IN THE TREATMENT OF PYLORIC ULCER.—M. Jonnesco (*Surgery, Gynecology and Obstetrics*, Vol. 6, 1908).
5. END RESULTS FOLLOWING BENIGN DISEASE OF THE STOMACH AND DUODENUM.—Deaver (*Surgery, Gynecology and Obstetrics*, Vol. 6, 1908).
6. TWO PERFORATIONS OF A GASTRIC ULCER WITHIN SIX MONTHS.—Brewer (*Annals of Surgery*, Vol. 48, October, 1908).
7. HOW FREQUENTLY DO GASTRIC ULCERS BECOME CARCINOMATA?—Rodman (*Surgery, Gynecology and Obstetrics*, Vol. 6, 1908).
8. UEBER DIE VERÄNDERUNG DES MAGENCHEMISMUS NACH GASTROENTEROSTOMIE.—L. Schönheim (*Arch. für Verdauungskrankheiten*, B. 16, H. 5).

In the light of recent developments in abdominal surgery, especially in its relation to gastrointestinal diseases, it has become necessary for the internist to post himself thoroughly concerning the surgical indications in abdominal diseases generally. Many of the cases that were formerly treated as "chronic dyspepsia," "indigestion," "gastritis," etc., are now recognized as ulcer of the stomach, secondary gastric manifestations in gall bladder affections, appendicitis, etc. There is, perhaps, no one disease which has brought the internist and the surgeon in closer association than has ulcer of the stomach. There is no doubt that while operation is necessary in a great many cases, surgery in connection with gastric ulcer has been greatly abused. It has now reached the point, however, where sufficient work has been done and sufficient time has elapsed to permit of valuable statistics with reference to the value of gastroenterostomy in the treatment of these cases. In the beginning, some surgeons maintained that every case of ulcer, regardless of the symptoms produced, was a case to be operated. Even the most enthusiastic of these surgeons concede to-day that surgical interference is indicated in certain cases only, dependent upon the chronicity or lack of response to rational treatment, and the symptoms produced.

Leech, in a very carefully prepared paper, deals with the medical aspect of 128 surgical operations. Those cases alone are regarded as cured where no persistent symptoms are mentioned by the patient. There were 79 non-malignant cases, 46 malignant cases. Most of the malignant cases were simple exploratory operations. A number of patients left with doubtful or wrong diagnoses. Ten supposed cases of malignancy proved benign, and in three cases the opposite error was made. The non-malignant cases all suffered severe symptoms, extending over a period of years. Most of them had suffered one or more attacks of hematemesis and nearly all were incapacitated for work permanently or at frequent intervals. Medical cure had failed in all cases. The longest period after operation was $5\frac{1}{4}$ years, the shortest eight months. Forty-seven per cent. showed complete relief; ten per cent. nearly complete, *i. e.*, occasional vomiting or careful diet; eleven per cent. limited improvement, *i. e.*, greatly benefited; nine per cent. no improvement; twenty-three per cent. died. This includes the mortality within two months after operation. Those cases with pyloric obstruction give the greatest percentage of cures and most permanent result. Five out of six duodenal ulcers were cured. Three cases of simple dilatation of the stomach, due to atonic gastritis proved fatal. In the cases not relieved, ten had persistent pain and eight vomited. In the malignant cases, the longest survival after gastroenterostomy was six months. In that a mortality of 46 per cent. exists in these cases, the writer does not regard the operation as indicated, and especially not in non-obstructing growths. The writer draws the following conclusions: (1) Where obstruction exists, operate. (2) Where no definite obstruction exists, but where repeated relapses show that the ulcer cannot be cured by medical treatment, surgery is indicated. (3) Some cases which at operation do not reveal a lesion do well after operation. (4) Atonic dilatation with debility gives bad results. (5) All duodenal ulcers should be operated.

In a symposium at the American Surgical Association in 1908, a number of interesting papers were presented along this same line. Mayo considered gastric and duodenal ulcers with special reference to their surgical cure. In his group of cases an average of twelve years existed between the time of operation and the first symptoms, medical treatment having failed in all cases. Of 543 operations for ulcers of the stomach and duodenum, 27 were for acute perforation and with simple closure of the perforation all remained well except one, which required a secondary gastroenterostomy. The writer has divided the work into three periods: (1) Previous to 1900, operative mortality 6 per cent., gastro-jejunostomy and pyloroplasty were done. (2) 1900 and 1905. During this period new fields were invaded and technical improvements were abundant, but the results were not as good as the first period, where stagnation alone was indication for operation, or the third period where a better basis for operation existed. During this second period, no sound pathology had been established and a large number of cases without ulcer were operated. (3) The past three years. Living pathology has been established and doubtful cases have been eliminated from operation. Before June 1st, 1906, 379 operations for gastric and duodenal ulcer were performed, and in 62 cases no ulcer was demonstrated, but nevertheless 74 per cent. of these were cured. In 318 cases with actual demonstration of ulcer 80.7 per cent. were cured and 9 per cent. improved. Mayo thinks that all cases operated for ulcer require careful medical supervision until they have made a complete recovery.

Moynihan discussed the late results (two years or more) after operations for benign diseases of the stomach. He had followed 265 cases after operation. He divided them into four classes: (1) Perforating ulcer of the stomach and duodenum, 27 cases; 18 of these recovered and 16 were cured. (2) Hemorrhage immediate cause for interference, 27 cases; 18 recoveries with 16 cures. (3) Cases of chronic ulcer, 205 cases; 203 recoveries, with 159 cures. (4) Cases of hour glass stomach, 22 cases; 19 recoveries with 17 cures. Of all cases 211 were cured, 9 improved, 12 no better, 9 doubtful, and six not recently reported. Conclusions: Operative treatment should be employed exclusively in those cases with organic lesions. In acute perforations the perforations should be closed or the ulcer excised. Excision alone should be done when ulcers are situated on the lesser curvature. The location of non-malignant ulcers determines the treatment,—prepyloric, pyloric, and duodenal ulcers should be treated by gastroenterostomy.

Jannesco recommends pyloric exclusion in all spreading pyloric ulcers where pylorotomy is impossible. He regards this as preferable to gastroenterostomy, which is powerless against pain and hemorrhage, and has shown itself incapable of modifying the chemical composition of the gastric juice. He reports nine cases with no operative death, one death after eight days from hemorrhage from arteries at the base of the ulcer. All symptoms were relieved by the operation.

Deaver, in discussing end results in surgery on benign diseases of the stomach and duodenum in sixty-six cases, reports forty-four cases free from all symptoms, nine greatly improved, making 66.6 per cent. cured and 80.3 per cent. improved.

Brewer recites an interesting case of gastric ulcer in which there were two perforations within six months. A man, 21 years of age, was admitted to the hospital suffering from acute abdominal symptoms. There was a previous history of ulcer for $2\frac{1}{2}$ years. Operation revealed an ulcer of the pylorus with a small perforation, closure by purse string suture. Good recovery. The patient was readmitted to the hospital six months after the first operation with precisely the same symptoms. The second operation revealed a perforation of the ulcer. Infiltration was more marked than at previous operation. Closure by purse string suture; good recovery.

Rodman presents in a concise and interesting manner the question of the frequency with which gastric ulcers become carcinomata. The writer makes reference to the large number of internists who do not appreciate the complications of ulcers, especially malignant degeneration. This makes a large percentage of all stomach operations simply exploratory, in that the diagnosis is made too late for a radical operation. Mayo finds 54 per cent. of cancers of the stomach secondary to ulcer. Moynihan 72.1 per cent., and Robson 59.3 per cent. Robson has had four cases develop cancer after gastroenterostomy within periods of one to three and one-half years. The writer has had nine malignant ulcers of the stomach within two years; seven were at the pylorus and gave definite ulcer history. Ulcers undergoing cancerization cannot always be made out clinically, nor diagnosed even after the abdomen has been opened. Three types must be kept in mind in making a diagnosis: (1) Those in which classical symptoms of chronic ulcer exist and none of carcinoma. If these cases are not operated they die and death is reported due to hemorrhage. (2) Cases which give a definite ulcer history, modified after two or three years so that the diagnosis of carcinoma can easily be made. (3) So-called latent ulcer of Tuffier which is really cancerous

from its beginning. Here the symptoms of ulcer are absent or are present as mild dyspeptic disturbances which last for a number of months. After a short time, however, the signs of cancer develop rapidly. Cancerization of an ulcer has begun if clinical history, gastric analysis, symptoms and physical signs all, or most of them, point in the same direction.

It was shown by Schönheim that actual changes occur in the gastric secretions following gastroenterostomy and he carried out a series of investigations on the human being. Acidity after gastroenterostomy, even when bile and pancreas secretion does not enter the stomach, is reduced. In most cases both bile and pancreatic juices are to be found in the stomach after gastroenterostomy. This is a factor in reducing the stomach acidity. In a diet free of fat, bile and pancreatic juice are found in the stomach after some time, but if fat is given in quantity, they may be detected within a half hour. The alkali and intestinal juices, through chemical reaction, reduced the acidity of the stomach juice. The pepsin in many cases is inactive in the alkaline medium, while the trypsin is still active in weak acid medium. By fat diet, frequent feeding and abundant water, the hydrochloric acid can be entirely eliminated and the ulcer can thus be healed. Even though gastroenterostomy brings about favorable conditions for stomach ulcer, nevertheless only those cases should be treated surgically which have resisted long and careful medical treatment and still show no tendency to heal.

THE THERAPEUTIC ACTION AND INDICATIONS OF CALCIUM SALTS.

A REVIEW OF RECENT LITERATURE.

By WILLIAM ENGELBACH, M. D.

1. THERAPEUTIC ACTION OF CALCIUM SALTS.—Sir Almroth Wright (*Folia Therapeutica*, January, 1909).
2. USE OF CALCIUM SALTS IN VARIOUS MORBID CONDITIONS.—A. P. Luff (*British Med. Jour.*, January 30).
3. CONTRAINDICATION OF CALCIUM IN MITRAL STENOSIS.—Sir James Barr (*Folia Therapeutica*, January, 1909).
4. CALCIUM SALTS AS A PREVENTIVE FOR SERUM SICKNESS.—J. Gewin (*Munch. med. Woch.*, December 22, LV, No. 51, pp. 2651-2698).
5. LIME IN TREATMENT OF EPILEPSY.—Cicarelli (*Policlinico*, February 7, XVI, No. 6, pp. 165-196).
6. PAROXYSMAL HEMOGLOBINURIA.—C. F. Hoover and C. W. Stone (*Archives of Internal Medicine*, November, 1908).
7. THE EFFECT OF CALCIUM SALTS AND CITRIC ACID ON THE COAGULATION OF THE BLOOD.—Addis (*Quart. Jour. of Med.*, January, 1909).

The therapeutic action of calcium salts owes its elucidation mainly to the labors of Sir Almroth Wright. On the one hand calcification is associated with tissue degeneration and death, and on the other hand there is an active calcium metabolism in the body, essential for the maintenance of health. It is stated by Wright that the time-honored milk diet to which acute invalids are submitted as a matter of routine is a direct invitation to the onset of thrombosis, owing to the large amount of calcium present in such a diet, and it is well known that calcium salts are deeply concerned in the coagulation of blood. But excessive decalcification is also attended by evils. Wright himself found that as a boy he suffered from aggravated attacks of giant urticaria when he partook of acid fluids. The explanation was that the coagulability of the blood was diminished, and as a consequence serum exuded from the blood vessels into the lymph spaces. This serous exudation is held to account for urticaria, chilblains, functional albuminuria, angioneurotic edema, and certain forms of headache. These various conditions are, therefore, rationally treated by administering such a salt as calcium lactate in doses of 15 grains thrice daily.

Luff cites Wright's observations that deficient blood coagulability does not always manifest itself in actual hemorrhages, but may show instead an increased transudation of plasma through the capillary wall—"serous hemorrhage." Examples are urticaria, chilblains, edema of the feet and hands, not due to cardiac, renal or venous troubles, and a certain form of headache known as the lymphatic type. This last occurs

more frequently in women, usually as a heavy, dull ache in the frontal region, occasionally as a throbbing pain in the frontal and temporal regions. It commonly appears on awakening in the morning, and diminishes in intensity or disappears after a few hours. It is most intractable. The subjects of it are usually of the lymphatic type, with a tendency to a slight edema of the face, eyelids, hands and feet. Ross suggested the administration of a calcium salt to increase the coagulability of the blood, and demonstrates that the decalcification of the blood, with consequent diminution of coagulability, which can be brought about by potassium citrate, caused a reappearance of the headaches. During nine years Luff has treated 121 cases of deficient blood coagulability with calcium salts, usually with the best effects. The conditions treated included headache, chilblains, boils, urticaria, flushing of the face, aneurism of the aorta, hemoglobinuria, edema of the feet on exertion, vesicular or bullous eruptions, and certain skin conditions—erythema, lichen planus, gouty pruritus ani, and offensive perspiration. He uses for adults calcium lactate, 15 grains (1 gram) in a fluid ounce of chloroform water, with from a half to one minim of tincture of capsicum, three times a day, one hour before meals. The constipation caused by the drug must be controlled, for which purpose salines should not be used, owing to their precipitant action on calcium salts. He has found an effusion of senna pods taken at bedtime the most useful laxative.

Sir James Barr, of Liverpool, gives mitral stenosis as a contraindication for calcium. His conception of the cause of mitral stenosis is brilliant in itself and intensely valuable from the therapeutic aspect. Rheumatic endocarditis is the underlying condition, but the actual evolution of mitral stenosis probably depends upon an excess of calcium ions in the blood. When these are present in excess the sclerotic changes which follow inflammatory processes are apt to be carried to an extreme degree. Calcium salts also raise the blood-pressure, they increase the force of the cardiac contractions, give rise to hypertrophy of the muscoli papillares, cause violent collision of the mitral cusps, increase the formation of the fibroid tissues and gradually cement and unite the edges of the cusps together. This consideration conveys its lesson for the treatment of the earliest stages of mitral stenosis and also for the antecedent endocarditis before the valvular disease has become established. It is obvious that a mitral opening offers a greater obstacle to the passage of blood if the latter is thick, viscid, and easily coagulable. Blood containing an excess of calcium ions is liable to get into this condition, and thus add to the difficulty under which the circulation is laboring. The remedy at hand to counteract this is citric acid. Administered three or four times daily in doses of 30 grains, it washes the calcium salts out of the blood and confers upon it a greater fluidity. Those who have used citric acid in cases of mitral stenosis find that it really affords relief when symptoms of back pressure are in evidence.

Gewin states that every alternate patient in a series of 200 was given calcium chlorid by the mouth when diphtheria antitoxin was injected. The results confirmed the efficacy of calcium chlorid in prevention of serum sickness, or at least in attenuating it, so that the drug is now given as routine measure in every case. The dose was 1 gm. (15 grains) for the larger dose of serum, and half this with the small doses.

Cicarelli gives the details of twenty-nine cases of epilepsy in which he found that treatment with lime had a pronounced effect in mitigating the seizures and reducing their number. He regards the lime salts

as preferable to the bromides at times, the best results being obtained when a course of lime was alternated with the ordinary bromide treatment. He gave daily from 2 to 3 gm. (30 to 45 grains) of calcium hypophosphite in fractional dose. The patients were all chronic epileptics, although the affection was of traumatic origin in some and associated with infantile spastic paralysis in others, the majority, however, being of the idiopathic variety.

Two patients with paroxysmal hemoglobinuria were given sixty grains a day over a period of two weeks by Hoover and Stone. At the end of that period the patients responded to cold as before and the hemolysis in vitro was unaffected. Nor did calcium lactate inhibit the hemolysis in vitro. After their experiences with cholesterin in the laboratory, they administered cholesterin to these patients per os ten grains three times daily dissolved in olive oil. After ten days' trial of the cholesterin treatment they found that hemolysis in vitro was unaffected in both patients. The weather during this period was very warm, so neither patient had an attack, and although neither patient objected to repeated venous punctures for obtaining blood, they did not wish to expose themselves to an attack of hemoglobinuria by exposure to a cold foot bath. So whether the cholesterin therapy may offer protection against attacks due to exposure to cold or not, remains undecided.

Addis has recently restudied the question, using a more accurate method of calcium determination, and a coagulometer more accurate than that of Wright. He concludes that the coagulation time of the blood is unaffected by the internal administration of soluble calcium salts or citric acid in the doses which we ordinarily prescribe. He acknowledges that the amount of ionizable calcium is increased by the administration of calcium salts and diminished by the use of citric acid, but states that the increase and decrease is much less than is needed to have any appreciable effect on coagulation. It looks as though we should either have to increase considerably the dosage of the calcium salts and citric acid when we give them for the purpose of affecting coagulability, or we shall have to find some more efficient means of introducing them into the circulation.

CORRESPONDENCE.

PARIS LETTER.

By AUGUSTE A. HOUSQUAINS, M. D.

LEUCOPLAKIA BUCCO-LINGUALIS: ITS ETIOLOGY AND TREATMENT.

Thanks to the numerous works which have recently been published, more and more light is being thrown on a subject that has been the cause of numerous controversies, and has given rise to the most contradictory hypotheses, namely, the disease which the dermatologist, Bazin, called *psoriasis buccalis* but which is in reality *leucoplakia bucco-lingualis*. The latter designation has the advantage of defining the aspect of the affection as well as indicating its location without intimating its nature. Both from the point of view of general pathology and clinical observation, *leucoplakia* is invested with considerable importance. It has been established beyond a doubt that it constitutes one of the most frequent disturbances of syphilis; and that in the course of time modifications take place in its aspect and histologic structure which tend towards its transformation into *epithelioma*.

Objectively *leucoplakia* is, as is known, characterized by a smooth, pearly-white patch, regular in form but of small dimensions. On the tongue the patches are seen as two elongated bands on each side of the median raphe, or arranged in the manner of a turtle-shell. On the lips the patches are in folds, and irregular on account of the irritations to which the mucous membrane is subjected. Arthritism was thought to be responsible for this disease, but dismissing rare cases, we must admit that the origin is always syphilitic. To-day, instead of speaking of an arthritic diathesis, we speak of a syphilitic diathesis. Without positively affirming that *leucoplakia* is a syphilitic lesion, we are nevertheless justified in saying that it is of syphilitic origin. Although it is an affection peculiar to syphilis, it would be impossible to demonstrate that all syphilitics are necessarily affected with the disease. Nevertheless, it should not be forgotten that agents causing irritation of the mucous membrane are at times factors which should not be overlooked. Alcohol, spices, bad teeth, false teeth, and above all, tobacco, may be responsible but any one of these cannot be held indispensable. If *leucoplakia* is more frequent when these conditions are present, there are, on the other hand, numerous cases in women where there are no *nicotinism*, *alcoholism*, or teeth of a defective nature. Again, not only has the syphilitic origin of *leucoplakia* been verified by statistics, but it can be said in all truth that this affection has the necessary semiologic value to make it a veritable index in the revelation of an unsuspected syphilitic infection. In certain cases it follows immediately after the successive appearances of mucous patches.

As regards the aspect of *leucoplakia* it would be well to remember that it is not unchangeable, but undergoes modifications contrary to

what one would suppose would be its progress when not treated. The scaly patches detach themselves and leave a glistening surface or a decidedly sclerosed epithelium, which fissures or granulates, and finally develops into an epithelioma. From a histologic point of view, leucoplakia is characterized by a thickening of the epithelial layer, with sclerosis of the corium. In fact, this condition has been compared with a true cirrhosis of the buccal mucous membrane. In the deeper layers of the epithelium there is developed a layer of cells charged with keratohyalin, approaching to a keratinization of the epithelium. Epidermic bodies have frequently been observed in the epithelium of leucoplakia patches. According to MM. Gaucher and Sergent, this affection histologically considered is a hard papilloma. And in explanation of the facility with which leucoplakia undergoes a cancerous transformation, the main thing to remember is that the region in which it is situated is constantly subjected to numerous and repeated irritations. Such in brief are the summing up of the aspects and histology of leucoplakia.

What is its etiology, its real nature? Until recent times the irritations from nicotin and dental alterations were advanced as the exciting cause, or the cause was attributed to a diathesis: a morbid predisposition and, particularly, arthritism. It was also observed that leucoplakia would appear in old syphilitics recovering from the manifestations of the tertiary stage. Here the connection of syphilis with leucoplakia was decidedly evident. The most difficult cases, however, were those in which leucoplakia manifested itself in subjects who, up to that time, were considered, and believed themselves, free from a syphilitic infection. But in all these cases leucoplakia became a veritable stigma revealing syphilis, and was instrumental in causing a retrospective diagnosis to be made, which was often confirmed by a careful examination.

We can readily see what importance ought to be attached to an affection which, though limited to the buccal cavity, is beyond a doubt an indication of the general state of the organism. The first care, then, of the clinician, after making the diagnosis of leucoplakia, should be to make a thorough examination for syphilis. In case there are other stigmata, the diagnosis is confirmed; but even though there are lacking other confirmatory signs, "the conviction of the doctor," says M. Sergent, "should be unshaken." Moreover, in the majority of cases we can be certain of finding either detached signs or general paralysis, or, yet again, that ensemble of symptoms to which M. Babinski has called our attention and which consists of the close association between aortitis and pupillary disturbances, notably the loss of reflex accommodation to light.

What should be the treatment for buccal leucoplakia? All indications should proceed from what has been advanced with regard to its etiology, its nature and its evolution. At first we ought to suppress most carefully all causes which might irritate the buccal mucous membrane. The non-use of tobacco is the first restriction which should be placed on a syphilitic because nicotin certainly assists in bringing about leucoplakia. In case the affection is already present it is just as necessary to interdict its use, since on account of its irritating qualities it abets the cancerous development of leucoplakia. A good precautionary measure to be taken is to send the patient to a dentist so as to be assured that his teeth will be well cared for. Alcohol, spiced meats, and all other irritants should be proscribed. As to the leucoplakia patches themselves, when they are not fissured or ulcerous, a solution of bichromate of potash (1 to 50) should be painted on the surfaces; this treatment often suffices to cause the patches to disappear. When there are ulcerations, recourse

should be had to cauterization by means of the actual cautery, or to surgical intervention. But the principal indication in the treatment should be the employment of mercurial medication. Leucoplakia, being a syphilitic disturbance, demands immediate specific treatment. One important thing to remember, however, is, that iodide of potash should not be prescribed since this medicine induces the epitheliomatous development of the disease. Again, it is well to point out that mercurial treatment does not act directly on leucoplakia but does on the concomitant syphilitic manifestations, and on the syphilitic diathesis.

The conclusion to be drawn, from what has been said above, is the importance of making a systematic examination of the mouth. If leucoplakia buccalis is found, a thorough examination for other syphilitic stigmata should at once be instituted. The result of this further investigation is often positive. Even in those exceptional cases in which there are no indications of syphilis, therapeutics should not lose sight of the close connection between leucoplakia and syphilis, but apply the same remedies to the affection as when the exciting cause is syphilis.

March 10th.

OBITER DICTA FROM FOREIGN JOURNALS.

THE STUDY OF ANATOMY FROM THE STANDPOINTS OF USEFULNESS AND PROFITABLENESS.

Of the many lectures delivered daily in the medical colleges throughout the winter semester, very few contain the salient feature that has to its good the possibility of awakening the medical profession to certain neglects, which a lukewarmness, not to mention an unscientific attitude, allows to fructify. M. Rieffel's lecture, "*L'anatomie utile*" (Useful Anatomy) delivered before the Paris Faculty of Medicine on March 1st, can surely be counted among the small number, for its telling points are such that no disciple of all that modern medicine stands for could possibly remain untouched by the verities it contains. The following excerpt, while it covers only a small part of the field exploited by the lecturer, gives somewhat of an idea of the excellent uses the study of anatomy may be put to, when the modern advances made by the science of medicine are properly based on a deep and wide knowledge of its practical application:

It has been said in certain quarters that anatomy is a completed science, that it has reached perfection and, therefore, there is but little to add to its study. This is a criticism which invariably comes from those who have least studied the matter. Now although this criticism is unjust, it should nevertheless be a source of pride to us; for is it not fortunate that an inductive science, which later became deductive, has the foundations, solid and immutable, on which a secure superstructure rests? And do we not know, only too well, that to proceed from inexact anatomical data ends disastrously for medicine, as well as for surgery, by causing erroneous pathological conclusions? Let us not deceive ourselves any longer! The anatomy which I learned when a student from Cruveilhier and Richet, to mention only the authors of two of our best didactic treatises in anatomy, is surely not our anatomical knowledge to-day; for the questions, which some twenty years ago, seemed of secondary importance are now of a preponderant value. It would be a twice-told tale to mention again how attempts in thoraco-abdominal surgery necessitated the further study of splanchnic anatomy, and how modern gynecological interventions made compulsory a thorough revision of the topography of the pelvic viscera. Formerly a professor explained quite hurriedly the distribution of the cervical sympathetic and its ganglia, but would this be tolerated to-day when we know the great significance of this nerve plexus, and what its resection means in the cure of certain affections, such as exophthalmic goiter and epilepsy? Sappey devotes about five pages to the anatomy of the thymus; but in our present state of enlightenment would imitation of such brevity go uncriticised, with discussions rife about the physiology and pathology of this organ? These examples should suffice—though it would not be difficult to augment the number—to illustrate the importance of anatomy adapting itself to the incessant evolution of science. And since our knowledge of this special branch is not what it was in the past nor what it will be in the future, my thought is that there should be instituted a practical and useful manner of giving

information, in lectures and in writings, so that the knowledge acquired could meet the exigencies and the progressive stages in contemporary medicine and surgery. If I dwell to-day upon these questions at great length, it is because circumstances constrain me to do so. Anatomy is passing through a veritable crisis, being the butt of numerous attacks on the part of eminent men who, I fear, have not the correct idea of the value of useful anatomy, since they disdain to consider it seriously; a position that is wholly untenable. These attacks appear so often in medical journals that though I am astonished at times that no one has attempted to squelch them, I cannot but feel that there must be a tacit agreement that silence is the order of the day. Nevertheless, as far as I am concerned, I am not resigned to a state of silence which would indicate an attitude of indifference to the destruction of all those French works in anatomy which have added no little glory to the science of medicine. I am courageous and independent enough to say that I am opposed to the new ideas the Faculty of Medicine has introduced. If these ideas take root in the youthful minds of the medical students, the disadvantages of such instruction will bear bitter fruit in their professional careers when it is too late to rectify the mistakes. Now, do not attach to my criticism a meaning that I do not intend. Prejudice surely cannot be attributed to me, since it is my desire to discuss this matter only in a doctrinal and scientific sense.

One is falsely informed when one reads that the study of anatomy has served its purpose, that to be grounded in its principles and retain a clear memory of them is an anachronism; that anatomy is the hand-maid of pathological anatomy, and that it is possible to appreciate morbid changes without knowing the normal state. Would that the defenders of these childish medical opinions would meditate upon the following sentence by the illustrious Portal: "The study of anatomy in the abnormal state, though followed by a number of great men, has not made the progress it has made in the normal state; for the reason, I take it, that the very learned doctors were not good anatomists and the good anatomists not good doctors." Nevertheless, I hasten to add that to-day there are enough doctors of worth who are the adherents of sane traditions, to justify my opinion that they are not in the minority. Professor Dieulafoy, the incomparable lecturer on clinical medicine, is a case in point, for each chapter of his manual on pathology begins with a discussion of anatomo-physiologic questions. And since his book is in its sixteenth edition, how second-rate and old-fashioned it must be!

The decriers of anatomy who are shouting for its overthrow, are attempting to put in its honored place, in our fundamental studies, the sciences of life—physiology, bacteriology, histology, parasitology and physical chemistry. They demand that, as an introduction to medicine, we should no longer engage in the dissection of the cadaver, but devote the time to experimental studies and the clinical features of the living organism. Well may we ask, how is one to understand a parallel study, if dissection is not made to further one's knowledge of the construction of the human body? Really it were folly to draw a line of demarcation between anatomy and physiology, as if "the achievements of the former," as Bichat said, "were not closely connected with the researches of the latter; and as if the comprehension of the effect could be separated from the comprehension of the agent which produces it." Moreover, to what domain in medicine, if not to anatomy, would one attach our knowledge of mechanical physiology—articulations and muscles, in particular, things one would search for in vain for the least mention in the majority of modern treatises in physiology.

HISTORICAL NOTES.

DR. JOHN BROWN.

The 19th century produced no character that was more lovable than the sympathetic author of "Rab and His Friends." Other distinguished figures in medicine and literature were not devoid of qualities which



DR JOHN BROWN

From the bust in marble by Gauer.

were unusual, but though his contemporaries, in many instances, outstripped him in the matter of talent and production, not one possessed Dr. John Brown's nobility and sympathy; a fact not only illustrated in

his pathetic tales and charming correspondence, published in 1907, but in his daily habit when engaged in the practice of medicine. Now though ancestry cannot always be relied upon for the safe transmission of sterling qualities from father to son, in the case of Dr. Brown, the best lesson in the possibilities of heredity is very well illustrated; for his father was not only kindly, compassionate, and without guile, but manifested from an early age an inordinate desire for study. And in the mental picture that is ours after studying his tales, the three volumes of essays entitled "*Horæ Subsecivæ*," the "*Letters*," edited by his son, and E. T. McLaren's "*Dr. John Brown and His Sisters*," the subject of this sketch is always a man of exceptional parts who is dominated by that true spirit of altruism without which unselfishness cannot be portrayed in glowing colors.

Dr. John Brown first saw the light of day on the 22d of September, 1810. It would be well to remember this date, for if this period and the following two decades had not been those rayless surgical pre-ether days, we doubt very much whether the world would have been enriched by the story which so graphically describes an operation under circumstances which would be deprecated to-day. Minto House Hospital had been fitted up by Professor Syme as a Surgical Hospital and it was in his capacity as apprentice that John Brown received "James the Howgate Carrier and his wife, Ailie," who had arrived to be operated upon by the then greatest surgeon in Scotland. It was the custom in those days for a medical student, before he took his degree, to be apprenticed to a doctor; and right fortunate it was for John Brown that he fell into the hands of James Syme. This master of the art of surgery was easily in the lead in Scotland, and through his ingenuity as a skilful operator, and by his many innovations, had acquired a reputation beyond the confines of his own country. But besides being one of the greatest surgeons of his day, he was the author of "*The Principles of Surgery*," published in 1832, which soon established his fame as a teacher of the first rank. These were things that counted for much, during Syme's life, to make him a celebrated man; but had it not been for apprentice Brown's genius for noting the ways of human nature as expressed by one, who though grounded in the matter-of-fact principles of surgery, was not divorced from a healthy sentiment, there never would have been drawn for the enjoyment of posterity the life-like portrait of Syme, the surgeon. And thus though the excellence of Syme's work is now almost forgotten, there remains with us the enduring picture of the man who operated on the Howgate Carrier's wife, Ailie!

Of all the stories about doctors—and the world has had enough and to spare—the exquisite tale of "*Rab and His Friends*" is so far superior to all of them that none other belongs in its category. Its directness and simplicity bespeak the highest form of literary art, and though these may be beyond the ordinary doctor's ken, there is in this story enough earnestness of purpose, sureness of touch and photographic art to move him to the appreciation of the fact, that even hospital scenes can be transferred to paper, with success, without the introduction of mawkishness or over-elaborateness as to surgical details. Such art as this little classic of some ten pages evinces, cannot be praised too highly, for by its wizardry the atmosphere of the hospital is so truthfully transferred to the pages, that one cannot but marvel how so much in the way of description was accomplished by using only a limited number of words.

BOOK REVIEWS.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Vol. XI, No. 1, March, 1909. Octavo, 277 pages. Per annum, in four paper-bound volumes, containing 1,200 pages, \$6.00 net; in cloth, \$9.00 net. Lea & Febiger, Publishers, Philadelphia and New York.

The March issue of *Progressive Medicine* takes up a wide range of interests. Professor C. H. Frazier, of Philadelphia, deals, in one hundred pages, with the surgery of the head, neck and thorax, the most vital half of the body, a region to which he has devoted special attention, and in which he has won recognition as a leading authority. Of special interest are his articles on brain injuries, and the surgery of the thyroid and mammary glands.

Professor R. B. Preble, of Chicago, covers the great field of infectious diseases, including acute rheumatism, influenza and croupous pneumonia. Dr. Floyd M. Crandall, of New York, deals with the advances in pediatrics, and Drs. D. Braden Kyle, of Philadelphia, and Arthur B. Duel, of New York, with rhinology, laryngology, and otology. The subject of suppurative labyrinthitis has continued to occupy the foreground of interest in otology, and to it Dr. Duel devotes four of his thirty pages.

TEXT-BOOK OF DISEASES OF THE NOSE, THROAT AND EAR. For Use of Students and General Practitioners. By Francis R. Packard, Professor of Diseases of the Nose and Throat in the Philadelphia Polyclinic Hospital and College for Graduates in Medicine, etc., etc. Philadelphia and London: J. B. Lippincott Company. 1909.

At the present time, in this country, there is a very strong demand on the part of the profession for post-graduate instruction in the special branches of medicine and surgery. The author's long experience as teacher in a large post-graduate school has enabled him to produce a work unusually well adapted to the needs of both the post-graduate and the under-graduate student.

A MANUAL OF DISEASES OF THE NOSE, THROAT AND EAR. By E. B. Gleason, M. D., LL.D., Clinical Professor of Otology in the Medico-Chirurgical College, Philadelphia, etc., etc. Illustrated. Philadelphia and London: W. B. Saunders Company.

This seems an excellent short manual embodying all the essential facts pertaining to the diagnosis and treatment of the diseases of nose, throat and ear. Especially valuable as a feature of this volume it may be mentioned that it concludes with a collection of formulas designed to represent more than a mere catalogue of prescriptions. There is interpolated a description of the better methods of use of all the more important drugs.

PRINCIPLES AND PRACTICES OF MODERN OTOTOLOGY. By John F. Barnhill, M. D., Professor of Otology, Laryngology and Rhinology, Indiana School of Medicine, etc., and Ernest deWolfe Wales, B. S., M. D., Associate Professor of Otology, Laryngology and Rhinology, Indiana School of Medicine, etc. With 305 Original Illustrations, many in color. Philadelphia and London: W. B. Saunders Company.

The methods of practice in otology have changed so rapidly that much concerning the subject, although only recently accepted as standard, is now almost entirely obsolete. In this branch of medicine this fact calls for new works to present modern views. On the other hand, traditional incorrect beliefs, strangely persistent, have retarded the progress of otology in the past. It seemed important to the writers of this volume to attempt the eradication of such dangerous teachings. Then again, prophylaxis and very early treatment in the incipient stages of disease today play such a very important role, that in a modern text-book of otology much stress must be laid on these features and on the early diagnosis of aural diseases in special. Recognizing these facts as

the essential requirements for a thorough representation of the present status of otology, laryngology and rhinology, Barnhill and Wales undertook to write the volume now given to the profession. It is a splendid and valuable addition to otologic literature.

MANUAL OF THE DISEASES OF THE NOSE AND THROAT. By Cornelius Godfrey Coakley, A. M., M. D., Professor of Laryngology in the University and Bellevue Hospital Medical College, New York, etc., etc. Fourth Edition, revised and enlarged. Illustrated with 126 engravings and 7 colored plates. Lea & Febiger, New York and Philadelphia. 1908.

In furnishing a short manual which should be of value to the student as well as to the practitioner, the author of this volume has laid particular stress on the detailed consideration of all the practical problems, *i. e.*, of examination, diagnosis and treatment. Appearances as usually found on examination are carefully described, and from among the multiplicity of medical and surgical measures only those are given in detail which, in the author's personal experience, have proved the most satisfactory.

STUDENT'S HAND-BOOK OF GYNECOLOGY. By George Ernest Herman, M. D., F. R. C. P., etc., Consulting Obstetric Physician to the London Hospital, etc. With 170 Illustrations. New York: William Wood & Co., 1908.

By omitting all explanatory, argumentative and speculative matter, Herman has condensed his well-known work, "Diseases of Women," into this convenient hand-book. It shows what can be done to present all known facts in a special branch of medicine in compact form. This little hand-book contains everything that a student can be expected to know concerning gynecology, and it is vastly superior to the average quiz-compend or short manual offered for the use of students when preparing for examinations.

OBSTETRICAL TECHNIQUE, AS APPLIED TO PRIVATE PRACTICE. With a Chapter on Abortion, Premature Labor and Curettage. By Joseph Brown Cooke, M. D., Adjunct Professor of Obstetrics in the New York Polyclinic Medical School and Hospital, etc. Illustrated. Sixth Edition, enlarged and fully revised. Philadelphia: J. B. Lippincott Company, 1908.

This is a unique little volume filled from the first to the last page with good, sensible and practical suggestions. The young practitioner, well prepared theoretically to practice obstetrics, even after having had some practical experience in a maternity hospital, will soon realize the difficulties of handling confinements in the homes of patients; he will find himself lacking knowledge that it is important he should possess under such circumstances. In this excellent manual all such information is concisely and clearly presented. We feel less surprise than the author expresses that this little volume has met with such a generous appreciation at the hands of the profession.

VORLESUNGEN UEBER ALLGEMEINE GEBURTSHILFE. Von Professor Dr. Heinrich Bayer in Strassburg. I. Band, Heft 3. Anatomie der weiblichen Geschlechtsorgane. Mit 16 Tafeln und 63 Textabbildungen. Verlag von Schlesier & Schweickhardt in Strassburg. 1908. Price: Marks 20.

One acquainted with the first two parts of these lectures on general obstetrics will greet the appearance of this third part of the first volume with delight and satisfaction. The work when finished will represent the most complete and most interesting exhibition of the personal views of an eminent scientist on practically every question of interest to the obstetrician. These questions are considered from the developmental, comparative anatomic, physiologic and pathologic points of view. All that is known concerning the subject is clearly set forth in a most intelligent discussion of the vast literature, and in almost every one of the many topics discussed in these volumes our knowledge is further enriched by the investigations of the author of this monumental work.

The present volume begins with six lectures on the anatomy of the abdominal wall, the peritoneum, the topography of the pelvic organs, the pelvic cellular tissue, the external and internal genital organs and the muscular architecture of the genital tract. The next two lectures deal with the ovary, ovulation and menstruation, followed by the concluding lecture of the volume, entitled, Secondary Sex Characteristics and Determination of Sex. This last is probably the most fascinating chapter in the volume. It presents the author's personal views on these intricate problems and abounds in original thought and suggestion in certain lines of research which give promise of a satisfactory solution of some of the most interesting problems of life.

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EDITORIAL.

OBSESSIONS AS OBSTACLES IN OUR CIVILIZATION.

Students of the tendencies which are accelerating or impeding our social evolution were fully prepared that before long, the dire situations into which so many of our newer developments in medical science were being dragged by the misplaced enthusiasm of frenetic obstructionists, would be explained on grounds which would easily elucidate to the right-minded the emptiness of many supposedly sincere agitations. If we would really understand why the welfare of horses, dogs and cats are matters of genuine solicitation on the part of a goodly number of men and women, the key of the enigma is to be found in that special constitutional psychasthenic state which has recently been described at length by Raymond, Janet and Dana.* That zoophil-psychosis is a real condition may account for many of the untoward symptoms of the rampant and truculent invective with which many antivivisectionists have brodered their perennial talk; and accepting this scientific theory as a fact, it behooves us to remain quite placid in the face of all those denunciations which have heretofore upset even the most obtund among us, when attacks on our gross materialism have been made. Now although a stubborn front, breathing, as perforce it must, a callous indifference to onslaughts ought to place us beyond debatable land, it cannot effect so desirable a change until certain investigators cease to encourage nonsensical sophistry. Contrary to accepted opinion, the inflaming of the imagination of the thinking element in various communities, does not come, as so many suppose, from that lower walk of intellectual life which we scorn to consider, but from men who, although possessed of scientific activities, direct them to such weighty subjects as the mind of

*The Zoophil-Psychosis. A Modern Malady; with Illustrative Cases. By Charles L. Dana, M. D., LL.D. *Medical Record*, March 6, 1909.

anthropoid apes,¹ what is instinct,² the hysteria of animals,³ the intelligence and instinct of birds,⁴ and our idea of instinct, its past and present significance.⁵

The influences which are born of an intellectual exaltation which makes much of the aspiration to arrive at definite results in regard to the mentality of animals and the quality of their powers of memory, reflection and reason, are just those influences that are eagerly studied by all who, whether psychasthenic or not, feel that their mundane careers are really only worth while when their sympathies are withdrawn from their fellow-beings and bestowed on certain ornaments of the animal world. Just at present gorillas, dogs and cats are enjoying a popularity which former years of considerable adulation did not grant them. As is known to all students of Plutarch, that wise Greek was not averse from attributing to animals not only reflection and reason, but friendship and the various affections which have made man a civilized entity. And even before his time, the Epicureans were moved in a like sentimental manner when studying the higher attributes of animals. In fact, the movement on behalf of those of the brute creation who are hampered by our ignorance of their intellects, had in each succeeding century champions to spare, and if we mention only Montaigne's name, it is because we take it moderns are more familiar with him than with others of lesser fame. But these great ideas, instinct with all the mistaken opinions of erratic humanitarians and explosive antivivisectionists, were blotted out for a short space of time when in 1897 Erich Wasmann's book "*Instinkt und Intelligenz im Tierreich*" was published. Wasmann drew upon him the anathemas of the proclaimers of the same rights for animals as for man, by reiterating the reactionary dictum, that man alone has intelligence and reason, while animals are greatly inferior on account of possessing only instinct. This firebrand lit up an acrimonious controversy, which noisily blazed its way from the scientists to those who are just outside the magic circle of ponderous dissertations, and then illumined even the small fry who walk in the sort of darkness generally inimical to the fructification of dissenting ideas. Had the controversy, after many tiresome stages, passed into a partial unification of ideas—that is, an approach to a truce—with honors for both sides, and above

¹Die Psyche des Menschenaffen. Dr. Alexander Sokolowsky. Die Umschau, January 23, 1909.

²Was ist Instinkt? Univ. Prof. Dr. H. E. Ziegler. Die Umschau, March 13, 1909.

³Hysterie bei Tieren? Dr. Vageler. Die Umschau, January 9, 1909.—Hysterie der Tiere? Geheimrat Prof. Dr. F. A. Kehler. Die Umschau, February 20, 1909.

⁴Der Vögel Instinkt und Verstand. Dr. J. Gengler. Die Umschau, March 4, 1908.

⁵Der Begriff des Instinktes einst und jetzt. Zoolog. Jahrbücher, Suppl. Bd. 7.

all peace for an already weary world, it could have been classed with other discussions that have stirred the stagnant waters of conventional life on the surface; but instead of following this sort of precedent, it produced the large and disorderly idea of antivivisection. And it is not getting beyond the bounds of reason and entering the realm sacred to chimeras, to state with emphasis, that without the scientific talk as to whether gorillas, dogs, horses, or cats act by instinct or by reason of an intelligence almost equal to man's, the emotionalism which is the pinion upon which the disciples of antivivisection soar skywards would never have had the power to command which it has to-day.

A commonplace of thought with all of us is that were it not for the lowly notions of what we are gracious enough to dub as "the common folk," the prejudicial views of the higher flights of medical science would not obtain. We console ourselves, when attacks are made on our advances, by saying that opposition must be expected from quarters which have never benefited by the rigorous instruction that can only be derived from an atmosphere imbued with what science ought to stand for. But though the antagonism may at times be attributed to the intellectual outcasts, to make them responsible for the raising of the many stumbling-blocks, requires much modification to bring the statement into accord with the facts. The work of the class of writers we have mentioned is doing much more to contravene the movement towards the alleviation of human suffering by experiments in vivisection, than all the fustian talk wranglers of small note may indulge in. For by attributing to animals a semblance to the higher attributes of man, there is created a feeling, among those whose emotionalism is woven out of small intellectual frenzies, which is the best barrier that could be opposed by any master-builder to progress on lines at present greatly to be desired. In fact, of the two specimens of modern man which we have discussed, who can gainsay that the supposedly well-balanced scientist is not more blameworthy than the individual who is laboring under the burden of an obsessive psychosis that manifests itself in an inordinate consideration, if not affection, for animals?

THE CULTUS OF LONGEVITY.

If any fact stands out clearly from other facts, with their frayed and worn edges, it is this—that we are almost light-hearted at the present time in our contemplation of old age, that bugbear of an earlier generation which sooner or later beset its victims in such a manner as to deprive them of their physical resistance to cope with disease. Just as

some decades back, a spiritualistic book was written with the talismanic title "There Is No Death," the present concept that buoys up our drooping spirits is blazoned forth in hopeful words that must be the right sort of stimulus, since they carry the promise of an almost complete obliteration of the disadvantages incident to old age, and of a span of life far beyond the time allotted by the Psalmist. This stride in the direction of an ideal state is not as yet *un fait accompli*; and though the impatient may complain of this, on the ground that some of the hopes held out have failed of realization, enough interest has been evidenced in the cherished plan of exterminating the incubus of physical, mental and social inconveniences, to warrant a pause to all those unphilosophic doctors who lumber on from precedent to precedent, with no thought of how more effective, in certain conditions, is a change in one's mental habit, one's physical and dietary habits, than is the little pill they have aureoled into a panacea.

Of the many expressions on this vital subject, the last word has surely been written by Dr. J. L. Nascher, in his paper "Longevity and Rejuvenescence," in the *New York Medical Journal* of April 17, for with a patience most commendable he unfolds all those details which cannot but be of vast importance in the campaign against the inroads of old age. The senile changes in the blood vessels and in the digestive organs receive the usual attention that is bestowed on them in all articles on old age, and though they are not really relegated to a place of secondary importance, so cunning is the writer's art that we realize upon finishing his paper, how equally important are his new and galvanizing ideas. These thoughts which really give body and interest to the paper have a simplicity that is most alluring; and, moreover, have the high virtue of getting us away from a contemplation of the great inevitable of old age—arterio-sclerosis with all its anticipatory mental depressions—by an appeal to the unalloyed thought that was advocated by Rousseau when he gave to the world his famous dictum "Back to Nature." But even a higher conception than what educators to-day deprecate as Rousseauism, is advanced by Dr. Nascher; for, being a very modern medico-sociologist, he does not dally long with the education of youth, as Rousseau did when he opposed the restraints an age's artificiality placed upon it, but marshals his forces against certain iron-clad customs which a conventional world has imposed on its denizens. One quotation will suffice to show how uncomplicated is the process by which rejuvenescence can be achieved: "A more important mental factor in creating the feeling of age is enforced seriousness and dignity, which become in time habitual and restrain the person from such recreations which would best overcome the mental and physical fatigue of their vocations.

An elderly physician went to a masked ball disguised as a school boy. He played marbles, spun a top, and played with others similarly masked. For weeks afterwards he was in a joyous humor, more active and brighter than he had been in years. We decry the old maid who dresses as a young girl and seeks her companions among the young. One of them said she felt young because she tried to feel young by dressing and acting as a young person. She knew the secret of rejuvenescence."

Metchnikoff, in his "Prolongation of Life," has much to say about the optimism of Goethe when he was a septuagenarian. As every student of the poet's life knows, the playing of marbles or the spinning of tops did not enter largely into his daily avocations; therefore, there must have been other incentives to rejuvenate him into a state not at all commensurate with his years. According to Metchnikoff, the poet was not proof against certain temptations, which an unkind world thinks should be dismissed even before the cataclysm of four-score and ten. In fact, so revivifying were the impressions received from a decidedly long and uninterrupted acquaintance with a number of women, poetically known as *Egerias*, that when Goethe decided to marry Ulrique von Lewetzow, their ages being respectively 74 and 19, there was no consternation in his circle of friends. But he had reckoned without his own family; and they, not really appreciating how interference would bring on arteriosclerosis by causing the poet to grieve intensely over shattered hopes, prevented the marriage. Viewing this dire situation through the glasses of sanity, one would think that the interference was not a matter that should be heavily scored by later historians; but Metchnikoff thinks otherwise, for in the chapter, "Goethe's Old Age," he shows with rare pathos how destructive of rejuvenescence was the stroke the poet received when preventive measures to his marriage were instituted, and why his undermined constitution fell a victim to disease at the early age of 83!

Rousseau and Pinel were no mean reformers: the one, as champion of natural mental growth, instead of spoken injunctions and prohibitions; the other, as abolisher of gags, chains, and dark cells. They fought a valiant battle on behalf of the oppressed, and benefited the world. But when reformers take unto themselves the cause of the liberation of old age from what they suppose are trammels, and introduce for its accomplishment the fatuous theories of which Dr. Nascher, and many other satellites of the great Russo-Frenchman, Metchnikoff, are ardent advocates, they are merely presenting a travesty of the matter. Just because a man or woman is beyond the meridian of life is no reason for a cloistered existence for the former, or the garb of an old woman for the latter; but, on the other hand, is it the critical period when, by playing

the games of a six-year-old, or assuming the dress and deportment of a young girl, some, if not all, of the physical and mental disadvantages of increasing years will be abolished?

THE MEDICAL STUDENT AND HIS ORTHOGRAPHY.

A trumpet-blast of no uncertain sound has recently been dealt out by Dr. George Dock* on the important subject of the many deficiencies that scintillate from the misconstrued words which medical students write with a facility that must be the envy of all other students. It is not necessary that we should follow in detail the many verbal irregularities which the writer's indignation prompts him to print, to warrant the assertion that what he says is true; but though his sufferings are keen when brought face to face with the matter of quite senseless verbal butcheries that cannot lay even the slightest claim to that balm of many bad spellers—the insinuating and invincible charms of phonetics—we cannot but believe that in limiting himself to the medical student, he narrows the subject to such slender proportions that all thought of its cosmic interpretation is lost sight of. And by cosmic interpretation we mean an inclusion that embraces all students who, having passed beyond the stage of monosyllabic words, are called upon by their multifarious studies to grapple with orthographic intricacies. These are not of so small a number that they may be dismissed by the critic with but a few words, for their triumphant growth has the sort of prolificacy which marks each decade, or even each lustre, as another advance in the increase of verbal perturbants that more securely assure our upset.

It is well in its way to fasten on “an imperfect technical training” the sins of commission that pertain to writing measles “measels,” and pus “puss;” and though the simplicity of these words should offer no excuse for any malformations, it should not be forgotten that the mind of the medical student is sown not only with these scientific verbal beginnings, but is made compulsory host to the most variegated and complicated technical terms human ingenuity has fashioned for the discomfiture of the normal mind. Now “technical training” is a matter of considerable importance, and one productive of much good for him who reaps from this educational asset, benefits which are not to be underestimated; but when this is said enough praise has been meted out, for while there can be no denial of its value as a means to a happy end,—a conveyer so to speak of a knowledge of roots that cannot but assist

*Spelling as an Index to the Preparation of the Medical Student. George Dock, M. D. *Journal of the American Medical Association*, April 10, 1909.

in the proper spelling of words,—we doubt if a mastery over this sort of training would perfect the medical student in the way desired by Dr. Dock. For this rather unfortunate exponent of modern medical education is almost daily requested to assimilate some technical term but lately put forth by a German scientist and greedily appropriated by some imitative American in a medical paper. So often is this done that our medical journals fairly bristle with technicalities, and their ruthless use by the many who imagine a complicated technical term of greater importance than a simpler one that might be mistaken for Anglo-Saxon ineptitude, is so striking a quality of latter-day medical literature as instanced in our publications, that to ask the medical tyro properly to digest all that is required of him in the way of orthography, is taking but small account of his mentality. Human endeavor has its limitations with regard to medical instruction, as it has in other walks of life, and though some proddings which are dealt out to the medical student should be encouraged, there are others which seem supererogatory since they come from men who are perched in the clouds. And surely the lament on the inaccuracies pertaining to the spelling of technical terms must be classed with those other exactions of the modern educator which proclaim him visionary and martinet.

Apart from what a technical training would stand for in making a student less inadaptably to the exigencies of a correct medical orthography, it would be well here to ask the pertinent question: How many doctors, who lay claim to an education of some pretention, are really prepared to commit their technical thoughts to paper without first consulting their favorite dictionary? And after the trying and, somewhat exasperating period devoted to the wholesome pastime of "looking up the spelling and meaning of a word," is the resultant mental state so gratifying that imitation on the part of others should be encouraged? Any one who has dwelt cheek by jowl with these special purveyors of knowledge can attest to a mental discomfiture, with peculiarities that only extraordinary will-power can assuage. This is not said as a warning against a limited indulgence in the matter of referring to medical dictionaries for illumination, for that sort of mental exercise is sound and healthy, but to those supreme efforts towards which an overpowering ambition sweeps one when orthographic perfection is the fascinating goal that lures one on. A few hardy investigators of words have achieved success, plus a mental peace greatly to be envied; but against these few successes one can array a formidable list of disheartened mariners whose fortitude, approaching a state of temerity, drove them into the un-

chartered seas of verbal intricacies only to shipwreck them in the shoals of multifarious technical terms of unmistakable foreign origin.

The English language has complications enough without the importation of extraneous matter that needs years of careful tending and pruning to make it an integral part of our common speech. An arbitrary ornament, when not too excessively used, may lend some effulgence to an otherwise flat and insipid form of speech or writing; but that it should be reckoned as an essential element, especially in its bustling and noisy youth when its hall-mark is that of a deprecatory foreignness, is the sort of unjust criticism of the resources of one's own language that declares for considerable ignorance. Now though the manifold introductions into our modern English have changed the old order and given place to the new, the metamorphosis is as nothing compared with the swift and vertiginous changes which the present day "medical English" is undergoing, to the confusion of even those whose pride as amateur lexicographers is the burden of many supposedly interesting conversations. And granting this to be the case, what justification can there be in an attack, be it ever so mild, on the shortcomings of the medical student because he lapses from the high standards raised by his imperious educators, when his already burdened mind is put to the so-called supreme educational test—the faultless spelling of words but newly acquired and as yet so ill-adapted for general use that some time must elapse before a careful study shall have placed the seal of approval upon them.

OPINION AND CRITICISM.

SPIRITUAL HEALING AGAIN.

No subject lends itself more readily to the sinuosities of argumentation than the many-sided and unceasingly interesting subject of healing by religious societies. What the cures have been up to the present time has not been divulged to an eager world, a discreet silence being thought more effective than a blatancy that might bring the matter into disrepute. Discretion that bespeaks modesty of an unusual order is not so common that it should invite only passing notice: but though our praise of this sterling quality is sincere, we cannot but feel that "the nervous complaints," upon whose many annoying ramifications the lambent spiritual flame was supposed to exercise its beneficent influence, are just as prevalent to-day as when the teachings of spiritual healing were first published. Doctors, like other mortals, have their weaknesses, and if there is one weakness that is peculiar to the medical profession it is the matter of statistics. And since no statistics have as yet been published to gratify this genuine medical weakness, how can the healers expect that quantum of praise which should be theirs? In other words, the willing tribute the medical community would fain lay at their feet, is withheld because of the stubborn front that evinces not the slightest indication of a *rapprochement*—a happy state to be effected by declaring a fellow-feeling for our statistical mania!

To counteract this lack of professional courtesy, both lay and medical journals teem with the *pros* and *cons* of the controversy, in the hope of convincing the most refractory of either side of their unpardonable errors. One of the latest enthusiastic defenders of the cause is Dr. A. T. Schofield, who already has to his credit a number of books* which have made some slight commotion in those easily-affected reading circles, where to "know something of medicine" is thought of greater importance than a knowledge of good literature. Now while Dr. Schofield is a genuine physician, having the privilege of writing not only M. D., but also M. R. C. S. E., after his name, he also neglects the matter of statistics; for though in his recent article, "Spiritual Healing," in the *Contemporary Review*, he promulgates such thoughts as come only from the rapt gaze that sees the exalted benefits of providential interference in disease, he does not satisfy that craving which can only be resolved into the very human curiosity to know "how many were cured and how

*The Force of Mind.—Nerves in Disorder and How to Get Them in Order.—The Unconscious Mind.

many weren't." It may be well in its way to say, as Dr. Schofield does, that "no true physician stands by his patient's bedside without reverently recognizing that the sufferer is already being treated by one greater than himself, and that his wisest course is to follow the lead given, and seek to help and not hinder the action of 'nature.' In many cases, however, this force, good and wise as it is, is not sufficient of itself to cope with the complicated disorders which are the results of an effete civilization. In a state of nature little medicine and few doctors are needed. Faith, however, can stimulate this latent power amazingly; and as is shown in hysteria, when the power is disordered, it is capable of doing almost anything with the body, producing high temperature, blisters, tumors, and other affections at will. So also with regard to cures: when this process is sufficiently energized by faith, not only functional diseases can be removed, but material objects, such as warts and varicose veins, can be made to disappear. Without this *vis medicatrix naturae* no cure is possible; the bones won't knit, the sores won't heal, while the germs kill, and diseases end fatally; but with it, energized by faith, it is difficult to set a limit to the power to cure." But granting that Dr. Schofield was sincere when he wrote the foregoing intellectually "energized" lines, we nevertheless regret to state that we are hardened against a conviction that has only the wobbly underpinnings of the Wonder-Book of strange bedside manifestations.

LITERARY NOTE.

"L'année Psychologique," edited by A. Binet, and the 1908 edition of which has just been issued by the well-known Paris publisher, Masson, is probably the most interesting periodical devoted to the study of psychology. Its chief merit lies in the fact that it rarely indulges in long-winded theoretic and abstract discussions but makes a point to deal with cases that are of interest to psychologists on account of their actuality. The salient feature of this volume is to trace all psychologic phenomena to cerebral physiology, a fact that should not be overlooked by doctors and biologists; and when one remembers Binet's clear and methodical mind, his critical judgment, and his constant desire to base his conclusions on facts that have stood the fire of a long probation and continuous study, the interest attaching to the articles selected for publication cannot be overestimated. Among the contributions that have more than a passing interest are several by Binet himself, one in particular on the intellectual development of the child; Imbert's illuminating essay on professional adynamia; and Chabot's article on the hygiene of students,—a subject that has been considerably threshed by a number of medical men, but whose prime facts are yet an unwritten page to many of our educators.

ORIGINAL ARTICLES

RECTAL ANÆSTHESIA.

By N. B. CARSON, M. D., of St. Louis.

The frequent mention of rectal anæsthesia has of late attracted my attention sufficiently to prompt me to look into the subject, especially as there are many cases in which this method can be used with great advantage to the surgeon, as it removes the anæsthetist from the operative field, thus giving the surgeon perfect freedom in his manipulations, and diminishing the danger of infection, and other dangers which go with the inhalation of ether.

Since this method has again been called to the attention of the profession by Cunningham, by a demonstration at the meeting of the American Medical Association, June, 1906, which had been ante-dated by an article describing the method in the *Boston Medical Journal* (April 20th, 1905), the subject has been tried by a number of surgeons; and the conclusions drawn at that time have changed but little.

The idea of rectal anæsthesia was not new with Cunningham as it has been used spasmodically ever since the introduction of ether as an anæsthetic. "Pirogoff was the first to mention ether narcosis by the rectum, in his book on etherization published in 1847 in St. Petersburg." Roux, Vincente y' Yhedo, and Mare Duprey experimented, using injections of ether and water mixed, but their observations, although proving that complete anæsthesia could be accomplished by this method, are said to have created no interest at the time.

We can find no further reference to the subject in the literature until 1884 when Molière used it at l'Hotel Dieu de Lyon, and, it is said, established its merit. He used a very simple apparatus, a large bottle immersed in hot water from which a tube conducted the ether vapor into the bowel. By this method the ether vapor was carried into the rectum in large quantities. Complete anæsthesia was produced in from ten to twenty minutes, a small quantity (10 gms.) of ether being required. Differing from the efforts of those who had preceded him, Molière's work aroused a great deal of interest and we find other surgeons practicing this method, with varying results. Post and Gray, of Boston, and Wier and Bull, of New York, reported a series of cases. Wier and Bull reported nine cases, nearly all of which had bloody or simple diarrhea; of the cases thus treated one died, a healthy, robust child of

eight months, which was operated upon for harelip. The child was fully anæsthetized in three minutes, less than two ounces of ether being used. This operation was successfully completed. The child was "somewhat depressed" after the operation, but rallied under stimulants and heat. During the night it had several bloody movements and died the following morning. In another case of the series, a boy 14 years old received rectal anæsthesia for 15 minutes and although he became sleepy and the breathing stertorous, sensibility was not completely lost and etherization in the ordinary way became necessary.

Wanschier records twenty-two cases anæsthetized by injecting ether vapor into the rectum after the method suggested by Pirogoff, and speaks in most favorable terms regarding his results. He mentions one especially noteworthy case which explains the occasional difficulty in producing narcosis by the rectal method. In this case he gave rectal ether for between thirty and forty-five minutes, with no result. Knowing that the patient's bowels had not been properly cleaned out he postponed the operation, emptied the bowel and rectum of their contents, and on the following day repeated the etherization. The patient was completely etherized in thirteen minutes. There are several cases in our series that corroborate this observation, and it might be said that difficulties in rectal etherization arise only from failure to have the bowel clean.

Post reports three cases etherized, at the Boston City Hospital, by the rectal method. The first case was a man with cellulitis of the arm, with general toxic symptoms. He was completely anæsthetized in thirteen and one-half minutes. The ether was then discontinued and complete anæsthesia continued for nearly a half hour. Several hours later he had two loose movements which contained much gas. A starch and opium enema was given and no further diarrhea resulted. The second case was one which came to the hospital after having eaten a hearty breakfast. The patient received rectal ether for thirty-four minutes, at which time she was completely anæsthetized, one and three-quarters ounces of ether being used. During the etherization the abdomen became slightly distended and the gas was expelled by abdominal pressure. The patient vomited about an ounce of fluid, once following the ether. There was a normal movement from the bowel about one hour later, and subsequently two, slightly loose, movements, one of which was tinged with blood. The third case was one with hemorrhoids. Etherization was complete in fifteen minutes and a little less than two ounces of ether were used. There was no vomiting or diarrhea following the etherization.

Dr. Dudley Buxton, of London, in his book on anæsthesia, claims to have used it extensively and strongly favors its employment in suitable cases.

Freeman Allen and F. E. Garland¹ say: "So far as may be judged from the writings of observers, from the principal text-books on anæ-

¹Bryant and Buck's Surgery.

thetia, and from the experience and observations of the present writers, the method seems to be by no means without dangers. Bloody diarrhea, with collapse and death have been known to follow its use. On the other hand, Cunningham, of Boston, in 1905, reported a series of forty-one cases without deaths or untoward symptoms, and he is still using the method."

The dangers of this method, as given by some observers, which are said to be collapse, diarrhea and bloody stools, are, I think, more imaginary than real; and when the cases are analyzed we generally find that they are due to some cause other than rectal anæsthesia as is manifest in the following cases²: "A fatal case occurring after rectal anæsthesia was a patient of Dr. J. B. Eagleson, of Seattle, Wash. Being in Seattle at the time, I learned the details of the case. The patient was a child about two years old, who was operated upon a second time to perform a succeeding step in the repair of a harelip and a cleft palate. At the first operation ether was administered by inhalation. Following the operation the child presented symptoms of acetoneuria and nearly died. At the second operation rectal ether was given. The narcosis was satisfactory in every way. The patient made a rapid ether recovery and was normal in every respect for two days following the operation. The patient died about twenty-four hours later, three days after the operation. The nurse was the same one that cared for the child at the previous operation, and she could see no difference in the symptoms subsequent to each operation, except that the symptoms came on earlier after the first operation. There were no bloody stools or diarrhea and the patient had been on the floor playing with other children the day following the operation. While acetone was not sought for in the urine, the quick ether recovery and normal condition existing for forty-eight hours, and the chain of symptoms following in one who had presented the same symptoms after a previous etherization, leave little doubt as to the real cause of death.

The other fatal case was in a woman sixty-three years old, etherized for Dr. Peer P. Johnson, of Beverly, Mass., who performed an operation for cancer of the neck. The patient was under ether for over two hours, and at the completion of the operation was in poor condition. The patient never rallied from the operation and died twenty-four hours later. Previous to death, she had several fecal and gaseous movements. While the first impulse would naturally be to blame the novel method of anæsthesia, it will be readily admitted that it is not unusual to have an aged patient die, as did this one, by imposing too great a tax upon an aged individual by a severe and prolonged operation."

Other dangers said to follow rectal etherization, than those mentioned, are dysentery, rectal ulcers and sloughing of the mucous membrane of the bowel. Cunningham says these dangers can be easily

²Rectal Anæsthesia. Boston Medical and Surgical Journal, Sept. 12, 1907.

explained when we consider the old method of administration, which was to place a bottle of ether in a boiling water bath and allow the vapor to be carried over into the rectum by its own expansion. By this method there was no means of appreciating the amount of ether passing into the rectum, and the ether going over at a high temperature was condensed in the tube and rectum. These dangers have been almost entirely eliminated by the introduction of improved apparatus and technique. In the Sutton apparatus, which I use, a mercury manometer has been added, on the theory that the ill results of this form of anæsthesia are due to the action of concentrated ether vapor on a mucous membrane rendered ischemic by pressure. He says our working pressure is 20 m.m. Hg., and the results following the addition of this part of the apparatus have fully justified the theoretical demand for its adoption.

The physiology of rectal anæsthesia, as given by Cunningham, is the theory advanced by Dr. M. Vejux-Tyrode, of the Pharmacological Department of the Harvard Medical School, who studied his cases, and this theory is as follows: First, a definite per cent. of ether must be present in the entire circulation to produce complete surgical anæsthesia. In human beings this amounts to a little under six volumes per cent. The rapidity with which complete narcosis results depends upon the rapidity with which the percentage of ether is brought up to nearly six volumes per cent. When ether is given by the lungs in the form of vapor it can only be administered in great dilution, unless excretion be interfered with and the percentage in the blood be raised about six volumes per cent., which would prove fatal by paralysis of the respiratory center in the medulla. On the other hand, when ether is administered by the rectum as a vapor, concentrated vapors may be given. Therefore, the chances for the rapidity of absorption and the raising of the required six volumes per cent. will take place more rapidly, while excretion may take place freely from the lungs. "This is an explanation for the rapidity with which certain of our cases have become anæsthetized."

I have been surprised in my series of cases by the rapidity of the absorption, as is evidenced by the very short time elapsing until ether can be detected upon the breath, and Cunningham accounts for the quickness with which some of his patients were fully anæsthetized by the rapidity of this absorption.

Sometimes it happens that exhalation from the lungs is more rapid than absorption, and on that account Sutton advises that the face be covered with towels so that there shall be a certain degree of rebreathing of ether-laden air, which of course diminishes the rapidity of exhalation. He also introduced a tube in the apparatus so that the vapor can be carried to the rectum and mouth at the same time until the anæsthesia is complete, when tube to the mouth can be shut off and the anæsthesia continued by the bowel. I have found that by beginning the administration of ether by inhalation and continuing it until the patient becomes partially under the influence, and then continue it by the rectum alone, we

avoid the stage of excitement, which is one of the advantages claimed for this method, and at the same time our patient escapes the smarting sensation and feeling of distension, which is a source of much complaint and is one of the disadvantages of the method. Our experience agrees with others as to the small quantity of ether used, as will be seen by referring to the records of our cases which will follow. In some of our cases I found after the operation that the "bulb" was full of ether so that it will appear as if more ether was used than was actually the case.

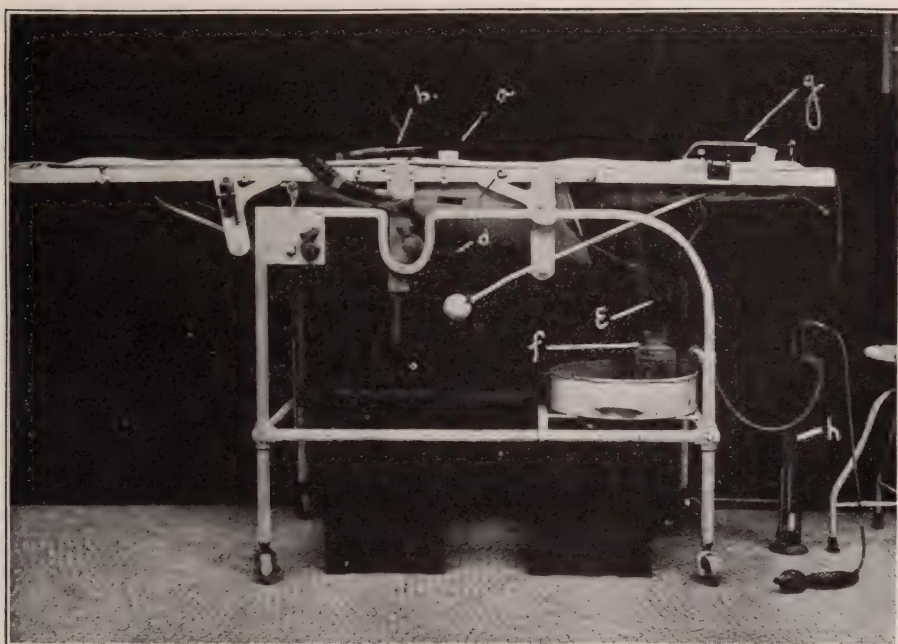


Fig. I. Modified Cunningham apparatus.

- a. Rectal tube.
- b. Branch tube connecting rectal tube with ether supply and exhaust.
- c. Glass portion of exhaust to prevent sagging and consequent collection of fluid, feces, etc.
- d. Afferent or ether supply tube.
- e. Combination clamp which closes afferent tube when opening exhaust.
- f. Tell-tale bottle filled with water so that escape of gas from exhaust may be recognized by sound.
- g. Accessory tube for administering ether under towels covering face.
- h. Ether cylinder. (In pail of warm water when in use.)

Besides the removal of the anæsthetist from the field of operation, the advantages of this method are, that there is less fatality "as the lung is free to eliminate the ether as fast as it is absorbed," and on that account it can be used safely where there is involvement of the lungs, as is proven by the case of Dr. Lecompte, of Boston, when a patient, just recovering from lobar pneumonia, was kept under the influence of ether for more than an hour, followed by no bad symptoms; and in my series of cases where case No. 1, with a tack in the left bronchus and

abscess of the lung, had been anæsthetized three times successfully by this method and with no bad symptoms following. Another great advantage of the method is absence of post-operative vomiting and intense nausea, which so often follow etherization by the mouth.

I believe, from an experience derived from four cases, that rectal etherization is especially applicable to goitre operations, on account of the small quantity of ether required, the rapidity of recovery from the effects of the ether, and the absence of vomiting.

Sutton* says he "was struck by the advantage offered by rectal anæsthesia in this class of cases, and believed that under favorable con-

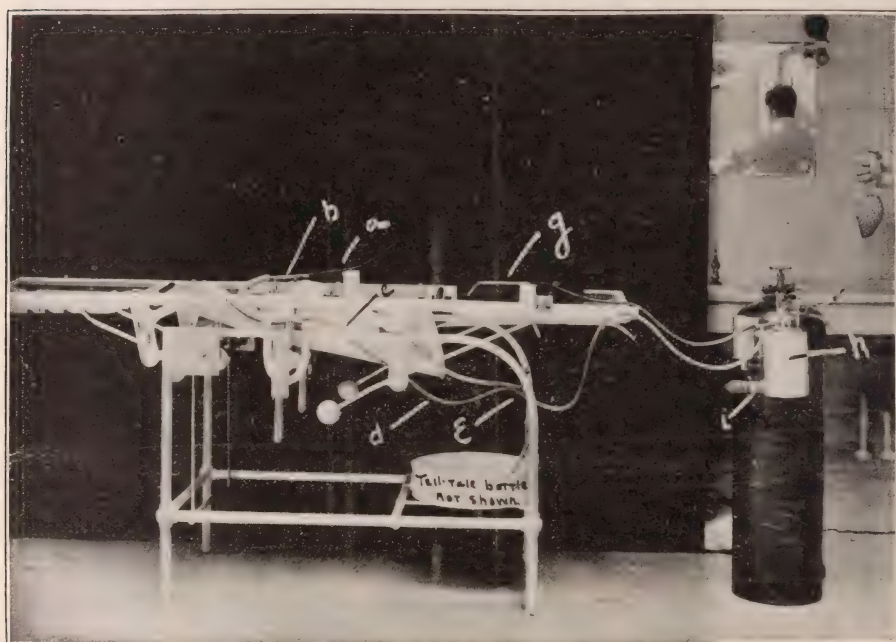


Fig. II. Apparatus for colonic anæsthesia now used at Roosevelt Hospital.

a to g. Same as in Fig. I.

h. New form of ether vapor generator, mounted on oxygen tank and connected at will with either oxygen or atmospheric air.

i. Tubular incandescent lamp for maintaining temperature of water bath.

ditions it might in time supplant the slower method of cocaine."

The apparatus most used is that of Cunningham which, as will be seen from the accompanying cuts, is very simple. The one I use is Sutton's simple apparatus, which was in use at Roosevelt Hospital until a more elaborate apparatus was substituted. This apparatus I have used and found very satisfactory. As much of the success of rectal anæsthesia depends upon the technique, the

*Rectal Anæsthesia; Experimental Studies, Together with a Report of Its Practical Employment at Roosevelt Hospital. N. B. Leggett. *Annals of Surgery*, October, 1907.

anæsthetist should study it carefully and see that the patient is properly prepared and the bowel perfectly empty. We have adopted the method used at Roosevelt Hospital, and as it has proved entirely satisfactory to us when properly carried out, we will give a description of it:

For twenty-four hours before operation the patient is put on liquid diet, after a laxative, preferably castor oil, has been administered. This is followed before bedtime by an S. S. enema. The following morning, or day of operation, another S. S. enema is given. One hour before operation the rectum is washed clean by an enema of plain warm water, the nurse being cautioned to see that the bowel is entirely emptied, which

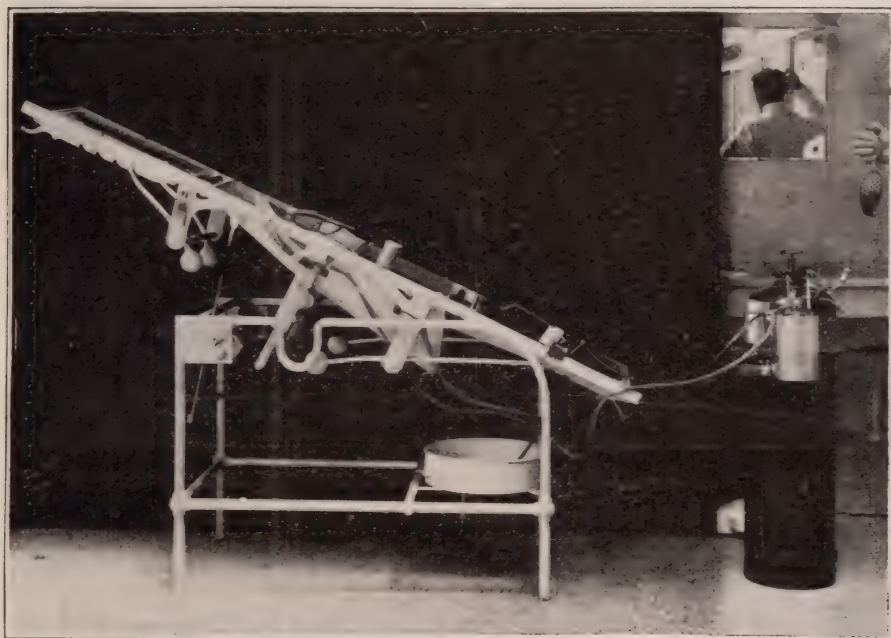


Fig. III. Showing head of table depressed without disturbing arrangement of apparatus.

will not always be done unless the nurse is accustomed to preparing patients for the rectal method, unless especially cautioned. When the patient is on the table the rectal tube is carefully inserted up to the bulb. The anæsthetist opens the efferent tube and allows the gas and bowel contents, if there should be any, to escape. The etherization should then commence by forcing the ether into the bowel by pressing upon the "cautery bulb," and rectal pressure of 20 m.m. Hg. maintained. About every five minutes the efferent tube should be opened by pressing upon the automatic clip, which at the same time closes the afferent tube and cuts off the supply of ether and allows the escape of gas. When the anæsthesia is completed, the bowel is emptied of the ether through the rectal tube, by massaging the abdomen. Some advise that the colon be filled with oxygen gas after it has been emptied of the superfluous ether

and before the rectal tube is taken out. When the patient is in bed, the rectum is again washed out with an S. S. enema, which is repeated in a half hour.

A strict adherence to this technique will prevent bad symptoms.

The following records of cases, sixteen in number, are presented as taken from the anæsthesia records. In this series there are three deaths,

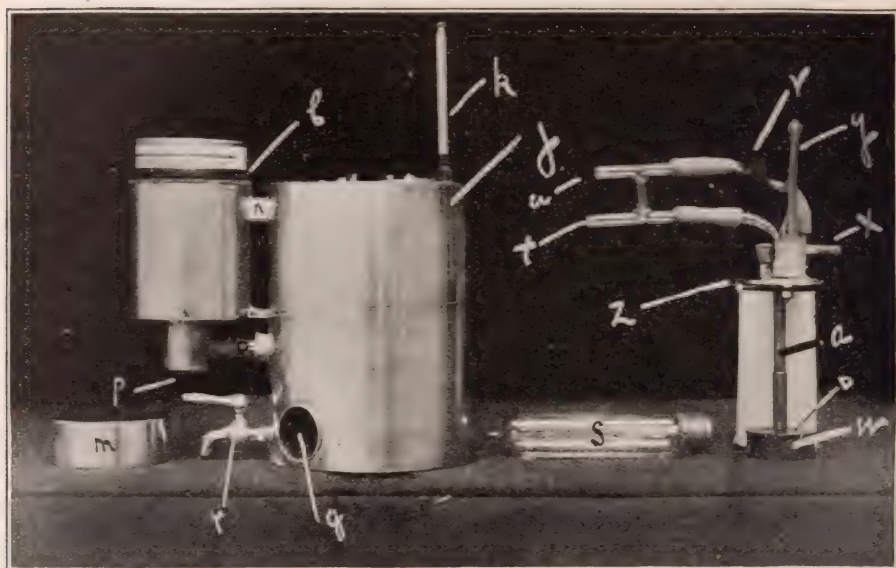


Fig. IV. Ether generator of perfected apparatus.

- j. Water jacket, encasing small ether generating chamber.
- k. Thermometer in water jacket.
- l. Ether reservoir from which ether in generating chamber is automatically replenished.
- m. Cover for above.
- n. Brass tube connecting storage chamber with generating chamber above level of ether.
- o. Glass tube connecting same below surface of ether.
- p. Head of spike for perforating seal of ether can on insertion into storage chamber.
- q. Blind tube extending into water jacket, into which heating bulb "s" is inserted.
- r. Faucet for emptying water jacket.
- s. Tubular incandescent bulb used as heater.
- z. Cover of ether generating chamber.
- t. Oxygen inlet to vapor generating chamber.
- u. Air inlet to vapor generating chamber.
- v. Clip on by-pass, by opening which pure air or pure oxygen can be passed into gut.
- w. Spiral wire of vapor generator.
- x. Connection to afferent tube to gut.
- y. Manometer.

two from surgical shock and one from medullary pressure in a brain case. One of the cases of shock was a case of cancer of the face requiring a very extensive plastic operation. The other was a case of exophthalmic goitre in very bad condition.

Case 1. Tracheotomy and bronchoscopy. A. Y., age 4 years. (Tack in bronchus.) Oil and enema preparation. Rectum contained water and rectal ether had to be supplemented with chloroform inhalation throughout. When rectal tube was removed a bloody, watery fluid escaped. S. S. enema afterwards. No irritation followed.

Case 2. Thoracotomy on same patient. Same preparation. Rectum was free from fluid and rectal ether produced quiet, complete anæsthesia in about 6 minutes. Kept under 1 hour. No inhalation. 150 gms. used. Slight bloody fluid. S. S. enema afterwards. No nausea or rectal irritation.

Case 3. Fracture of inferior maxilla. R. M., age 10 years. Patient was greatly frightened and rectal anæsthesia was supplemented by a few drops by inhalation. Patient was kept completely under for one-half hour. No rectal irritation.

Case 4. Exposure of occiput. F. B. About 100 gms. of ether were sprayed onto a mask, patient being in prone position. With 200 gms. by rectum patient was kept under for an hour. Patient lost large amount of blood, and received stimulation on the table, which was no fault of the anæsthesia. No nausea or rectal irritation.

Case 5. Exophthalmic goitre (thyroidectomy). D. C., age 28. Regular enemata. Morphine $\frac{1}{4}$, atropine 1-150 one hour before. Patient exceedingly nervous. With rectal ether and a few inhalations complete anæsthesia was produced. There was some struggling, but after once anæsthetized was easily kept under for one hour and thirty minutes. About 400 gms. of ether used. Patient lost considerable blood and received stimulants on the table. The anæsthesia was not as satisfactory as in former thyroidectomies. Slight bleeding from rectum.

Case 6. H. R. O., 27 years. Same patient as case 9. Sarcoma of axilla. Oil enemata. Morph. $\frac{1}{4}$, atropine 1-150. Patient anæsthetized by inhalation; 75 gms. to anæsthetize. Then with rectal ether patient was kept completely anæsthetized for one hour and twenty minutes with 150 gms. of ether. S. S. enema afterwards. No rectal irritation. Very little nausea.

Case 7. Thyroidectomy. C. S., 24, single, housework. Morph. $\frac{1}{4}$, atropine 1-150, one-half hour before operation. Castor oil and enemata. Rectal tube inserted; patient complained at first of burning in the rectum. A few ether inhalations and she passed quietly and quickly into unconsciousness. Mask removed and patient remained under the rectal anæsthesia throughout the operation without a struggle. Patient semi-conscious before leaving the table, very little nausea. No rectal irritation followed. No enemata.

Case 8. Thyroidectomy. E. A., age 5. Castor oil and enemata. A few inhalations to help at first. Complete anæsthesia came quietly in about 8 minutes. Inhalation stopped and rectal anæsthesia kept up without difficulty for one hour, using 230 gms. of ether. No nausea or vomiting or rectal irritation followed.

Case 9. Sarcoma (?) of axilla. H. R. O., 27 years. Oil enemata. Morph. $\frac{1}{4}$, atropine 1-300. Inhalations to supplement rectal, 300 gms. used, 50 gms. by inhalation. Time of operation one hour and fifteen minutes. No rectal irritation and very little nausea. No enema afterwards.

Case 10. Thyroidectomy. P. K., 24, housewife. Graves' disease, marked. Patient put through every detail of preparation and taken to operating room and put through every detail there. The bowel was prepared, rectal tube inserted and just enough ether given to allow the patient to smell and feel the effects of it. This was done on 4 or 5 days in succession under the name of "treatments." Morph. $\frac{1}{4}$, atropine 1-300, one-half hour before on day of operation. Patient had become acquainted with the procedure and was not nervous or frightened and the treatment was pushed a little further and anæsthesia produced, quietly and completely, in 15 minutes, without the patient's knowledge. A few inhalations were given at first but stopped when anæsthetized. Easy, quiet sleep kept up for 55 minutes; 150 grains of ether. Patient woke up in bed, did not know she had been operated upon. Very little rise in pulse. No nausea. S. S. enema. No irritation.

Case 11. Decompression. R. H., 28 years. Morph. $\frac{1}{4}$, atropine 1-120, half-hour before operation. Calomel and enemata. Patient a very large, muscular man, restless and delirious. Rectum contained some water. Rectal ether did not completely anæsthetize and mask had to be used throughout. No rectal irritation followed.

Case 12. A. Y. Thoracotomy. About 30 gms. were given by inhalation. Complete, quiet anæsthesia continued for 25 minutes. About 100 gms. used altogether. Perfectly satisfactory, no irritation and very little nausea.

Case 13. Mr. C. Resection of tuberculous glands of neck. Rectal anæsthesia supplemented by inhalations. Quiet and complete anæsthesia produced and continued for 1 hour and 30 minutes. About 50 gms. by inhalation; about 150 gms. by rectum. No irritation and very little nausea followed. Patient was a large, muscular, active, young farmer boy of 21 years. This was one of the most beautiful and satisfactory anæsthesias ever seen in an adult.

Case 14. Miss B. Thoracotomy. Combination inhalation and rectal anæsthesia. Complete and quiet anæsthesia produced and continued for 30 minutes. About 40 gms. by inhalation; about 75 gms. by rectum. No irritation and only slight amount of nausea followed.

Case 15. Mrs. R. Operated April 8, 1909. Duration one hour. Inhalation 70 gms. ether; rectal 100 gms. ether. No nausea. No rectal irritation. Quick ether recovery.

Case 16. Mrs. N. April 14, 1909. Amputation of breast and axillary glands. Ether inhalation 70 gms., ten minutes; rectal, 130 gms., one and one-half hours. Vomited twice. Quick ether recovery. No rectal irritation.

Besides the above cases we had two cases at the Skin and Cancer Hospital, one of which, above referred to, died. In these cases the method failed on account of improper preparation so that the rectal method was discontinued and inhalation substituted.

The more we use this method of producing anæsthesia the more we are convinced that its application in properly prepared cases has many advantages over the inhalation method.

The following personal communications from Dr. Sutton contain many valuable suggestions in connection with the construction of the apparatus for the application of rectal anæsthesia, and therefore we present the letters for the information of those who are interested in the subject:

DR. N. B. CARSON,

Humboldt Bldg., St. Louis.

Dear Sir: Dr. Blake has handed me your letter of the 10th inst., with the request that I give you the information you desire on apparatus for administration of ether per rectum. There is as yet no one who keeps in stock either the Cunningham apparatus or any of the modifications of it, which we have come to use at Roosevelt. I have made all of our own apparatus and think perhaps you would find it both quicker and cheaper to do likewise. The Cunningham apparatus is extremely simple, consisting only of an ether cylinder, approximately 2 inches in diameter and from 9 inches to 16 inches, or even 18 inches, in height; a hand bulb connected with a tube passing through the cork of the ether flask and to the bottom of the ether; and another tube merely penetrating the stopper of the ether chamber and serving to connect the same with the rectal tube.

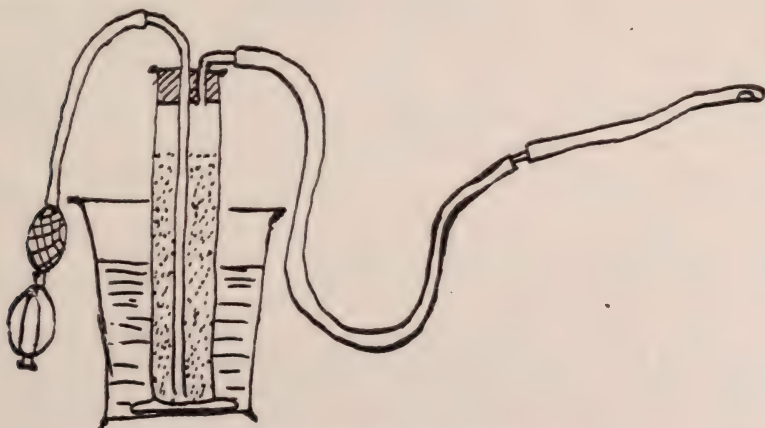
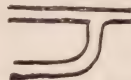


Illustration of Apparatus.

The ether was heated by immersion of the ether cylinder in a pail of warm water. When desirable to do so, the gases were allowed to escape from the gut by introducing the finger into the anus alongside the rectal tube and somewhat dilating the sphincter. To overcome this difficulty, Dr. Leggett, of the Surgical Research Department at P. & S., introduced a T-tube into the connection between ether cylinder and rectal tube, placing a clamp on the lateral branch. By releasing this, the pressure could be conveniently let off the bowel at any time.

In my own apparatus I have changed this T-tube to a modified Y-tube and placed it between the patient's thigh within 2 inches of the anus, shortening the rectal tube accordingly and connecting the afferent tube to the gut with the



Modified Y-tube.

upper arm, while the tube from the lower arm is led away into a bottle under the table. This arrangement permits the emptying of the gasses out of the gut and of fluid feces as well; which latter, in the earlier form of the apparatus, not infrequently plugged the afferent tube and greatly embarrassed the effort of the anesthetic. A mercury manometer has also been added, on the theory that the ill results of the form of anesthesia are due to the action of concentrated ether vapor on a mucous membrane rendered ischemic by pressure. Our working pressure is 20 m.m. Hg., and results, since the addition of this part of the apparatus, have fully justified the theoretical demand for its adoption. The rectal tube which we now use is about 8 inches long, has a bulb about $\frac{3}{4}$ -inch in diameter, $2\frac{1}{2}$ inches from the connected end, and has multiple (4 to 6) fenestræ.



Rectal tube with fenestræ.

The bulb serves to prevent the escape of gas around the tube and the multiple fenestræ prevent the complete blocking of the tube by prolapsed mucosa, etc., when the exhaust tube is opened. Also, we have found that in about 40 per cent. of our series of 120 cases, completely satisfactory anesthesia cannot be maintained by colonic absorption alone. There is a general tendency for the lungs, when open respiration is permitted, to excrete the ether nearly as fast as the colon is able to absorb it. For this reason we have made it a practice to cover the patient's face with three or four towels so that there is a certain degree of rebreathing of ether-laden air, which, of course, diminishes the rapidity of exhalation. As I have said, however, there are about 40 per cent. of cases which at some time or other in the course of the operation, need more ether than the colonic absorption is able to provide. This need may last only half a minute, as when the manipulations in a thyroidectomy stimulate a coughing reflex in a patient otherwise satisfactorily anesthetized, or it may be required at intervals throughout the anesthetic, as in cases of very alcoholic persons, or of patients with lax, and hence leaky, sphincters. To meet this need we have added a short tube branching off from the afferent tube to the gut, which on occasion is introduced under the towel covering the patient's face, and by means of which the air there confined is mixed to any desired degree with ether vapor. This apparatus is shown attached to the operating table in No. I of the photographs, which I am sending you under separate cover. This apparatus gives perfectly satisfactory results and can be very cheaply constructed.

On account of the bulk and instability of the ether cylinder, however, I have recently made up the form of vapor generator shown in photograph IV. This apparatus, which brackets on an ordinary oxygen tank, holds all but about

two drachms of its charge of ether in reserve and is heated by a 10 c. p. tubular incandescent electric lamp. It is so arranged that either air or oxygen may be used as a vehicle for carrying the ether vapor into the gut, or either may be passed into the gut without ether. Contact of air with ether for a sufficient time to accomplish saturation of the former with the latter is accomplished by passing the air through the spiral wire "W," which is just immersed in ether. The air or oxygen coming down the tube "a" enters the innermost turn of a sheet metal spiral, "W," which is soldered above to a round, flat metal plate, "h," and winding its way out travels slowly a distance of about 14 inches in direct contact with the warmed ether. The only objection to this apparatus is its expensiveness, which I estimate at about \$40.00.

An efficient and yet relatively inexpensive generator could be made by the use of the spiral wire in any wide-mouthed glass bottle, holding from 250 to 400 g. of ether and provided with a mercury manometer and the proper efferent connection, the heat being kept at the proper point by partial immersion in a pail of warmed water.

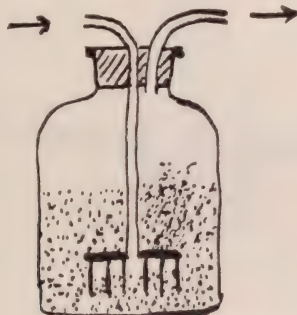


Illustration of generator.

Trusting your experience with the method may be as satisfactory as our own, I am,

Yours very sincerely,

WALTER S. SUTTON.

DR. N. B. CARSON,

St. Louis, Mo.

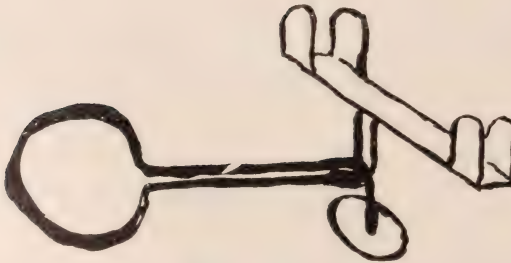
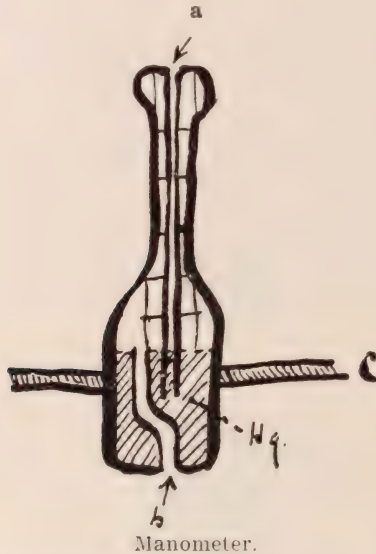
Roosevelt Hospital, N. Y. C., August 27, 1908.

My Dear Dr. Carson: As to the cost of the apparatus, I am afraid that a man who would charge \$30.00 for the simple apparatus would startle you with his estimate on the latest form, as the latter is much more expensive to construct.

The manometer I have shown is one of my own device, which is simply set into the cover of the ether generating chamber. As the sectional sketch shows, it is made up of a glass tube with a much smaller tube (about 1 m.m. in diameter) sealed into each end. The upper tube "a" is the one into which the mercury is forced by the pressure which is admitted through the lower tube "b." The diameter of the outer tube is so much greater than that of the tube "a" that a 20 m.m. rise in the latter does not lower the level in the former to any appreciable degree, hence the reading in the small tube "a" gives practically the correct pressure and it is not necessary to read up in one limb and down in the other, adding the two for the true reading, as in the ordinary

U-tube manometer. I made my own from a glass irrigating tip, which is about the proper length (between 4 and 5 inches).

The combination clip can be easily made by any mechanic or tinker by taking off one of the finger discs from a good, strong spring clip and replacing it by a piece of flat metal with four lugs to hold the rubber tubing. (See sketch.)



The afferent tube is caught by the four lugs and held in such a position that the tube is compressed by any effort to open the clip. The efferent tube is pinched by the clip proper.

Very sincerely,

WALTER S. SUTTON.

Roosevelt Hospital, N. Y. C., July 17, 1908.

DIAGNOSIS AND TREATMENT OF ECTOPIC GESTATION.

By E. E. MONTGOMERY, M. D.,Professor of Gynecology in Jefferson Medical College, Philadelphia.

The occurrence in my service during the last five months of some six cases of ectopic gestation, exhibiting phenomena rendering the diagnosis obscure, impels me to group them together for consideration. Ectopic gestation—the development of the fecundated ovum in an anomalous position—most generally occurs in some part of the Fallopian tube, and the unsuitability of this canal to continue to harbor and nourish the developing embryo, and the manifestly dire results of the termination of the misplaced conception, render its early recognition of the greatest importance. In no class of cases does it behoove the physician to be more on the alert than in those now under consideration. The early symptoms are those of ordinary pregnancy; one or more menstrual periods missed, with the occurrence of the usual vasomotor disturbances of early pregnancy, as anorexia, morning nausea and vomiting, depression of spirits, lassitude and irritability of temper. In addition, the patient will complain of a sense of uneasiness, occasional attacks of colic-like pain on the affected side. Where these recur with increasing frequency and severity, they should awaken the suspicion of an abnormal situation of the developing ovum. Severe attacks of pain, with a sensation of faintness or actual fainting, are indicative of rupture of the gestation-sac. Such rupture or hemorrhage into or from the tube is generally associated with bleeding from the genital tract. Prolonged bleeding associated with repeated attacks of cramp-like pain in one side of the abdomen or in the pelvis, should cause rupture of an ectopic gestation-sac to be suspected, even though the periods have occurred regularly and the individual be unmarried. The following history is an excellent illustration:

3-1-09: A nurse, unmarried, aet. 34 years, was admitted to St. Joseph's Hospital, with the record of having been perfectly regular in her menstruation until January 18th preceding, when she had an attack of pelvic pain so severe that she could not move, which soon yielded to the application of an ice-bag and enabled her to resume her occupation. On January 26th, while riding in a trolley car, she was again seized, but much less severely than on the previous date. She was taken home but did not recover for four days, and the pain was on the left side of the abdomen and radiated to the umbilicus. Similar seizures occurred on February 4th and 11th. After the last attack she remained in bed until she entered the hospital. She had a dark, bloody, vaginal discharge, which began with the first attack of pain and increased in severity with each subsequent one. She exhibited marked rigidity of the muscles

on the right side of the abdomen and a palpable mass was readily distinguished in the region of the appendix. She was sent to the hospital with the supposition that the condition was due to inflammation of the appendix, but a blood examination which showed erythrocytes of 3,500,000, leucocytes 7,000, and the absence of temperature variations, negatived the view of an inflammatory condition. After having been under observation a week without any recurrence, she was subjected to operation for a mass which could be recognized in the right tube.

The exposure of the peritoneum made it evident that free blood was in the cavity as it presented a dusky hue. Nearly a quart of clotted blood was found in the belly and the right tube contained a mass the size of a duck's egg, which contained the fetus enveloped in a firm clot. The right tube and ovary and the appendix were removed. The latter, aside from being long and tortuous, showed nothing abnormal. While this patient had an ectopic gestation, there was no indication of rupture; rather it was a threatened abortion, both the intra-abdominal and the vaginal hemorrhage having originated in the tube and taking place through its abdominal and uterine ends. The diagnosis was rendered difficult by the thickness and rigidity of the abdominal walls, and the absence of any cessation of the menstrual flow. The experienced gynecologist will see many cases in which his diagnosis must be largely derived from the subjective symptoms, as in the following instance:

A married woman, aet. 33 years, was admitted to my service at the Jefferson, who had given birth to five children, and four weeks before admission, without previous disturbance of menstruation, began to have pain in the left side of the abdomen, increased by walking and attended by a vaginal discharge of blood. No headache or febrile symptoms were at any time manifest. Upon admission, the patient appeared well nourished and in a healthy condition, except that there was an area of tenderness on palpation, extending from the crest of the ilium to the umbilicus and downward to the pubes. There was no palpable mass, but a slight lessening of the normal tympany. The posterior vaginal cul-de-sac slightly bulged and gave a sensation of moderate but ill-defined resistance. Intraperitoneal hemorrhage from ruptured ectopic gestation was suspected, and on November 18th, as a preliminary to abdominal incision and as an object lesson to a section of students, a puncture of the posterior vaginal fornix was made, through which there was at once a gush of dark, fluid blood, confirming the suspicion of intra-abdominal hemorrhage. Through an abdominal incision, the left tube and ovary, the former presenting a ruptured gestation-sac, were raised and removed. A considerable quantity of clotted and fluid blood was evacuated. I would emphasize the value of vaginal puncture as a certain and safe procedure for diagnosis in suspected cases. It not only affords certainty but assures a safe means of exploring the tubes prior to rupture, for the ordinary bimanual manipulation may provoke the rupture of such a sac and result in hemorrhage so severe as to threaten

life before the patient can be subjected to operation. Formerly, much stress was placed on the history of previous inflammation and subsequent existence of sterility. It has sometimes seemed to me that the efforts employed to prevent conception may sometimes react on the patient, producing changes in the functions of the tubes which favor the arrest of the fecundated ovum in its progress to the uterus. The severe abdominal pain in the region of the uterus and the discharge of blood and clots from the vagina of a supposed pregnant woman generally leads to the diagnosis of threatened or completed abortion, when the later progress will reveal that an intra-abdominal rupture and hemorrhage has been the cause of the disorder. This error can not be better illustrated than in the following case brought to my service March 7th, 1909, at the Jefferson Hospital:

A woman, aet. 28 years, married seven years and mother of one child aet. 5 years. She had menstruated last on December 10th, 1908, and had a supposed miscarriage on the 13th of February, when she had uterine bleeding and passed a number of large clots, and had severe cutting pain in the lower abdomen. The following day her physician curetted her, removing some decidual membrane, and packed the uterus. She developed a slight fever but was about until March 5th, when she had an attack of nausea and vomiting, pain in the epigastric and umbilical regions, which seemed to radiate from the right iliac fossa where there was marked tenderness. She fainted twice on the 6th. She was brought to the Hospital by the ambulance and referred to my service from the Accident Room. She was slender, under-sized, weak and languid. Her mucous membranes were pale and skin covered with cold perspiration. Her sallow skin presented a yellowish tint. Superficial fat was scanty and the muscles flabby, the thorax was long and narrow, the supra- and infrascapular fossae deep, the ribs prominent and expansion good. The lungs were normally clear and resonant, the breasts small and flabby and showed no enlargement of the papillae. The abdomen was symmetrical, with slight rigidity of the lower half of either rectus and marked tenderness over the right iliac fossa. Percussion disclosed dulness over either flank and tympany on each side when the patient was turned on the other. The cervix was low in the vagina, softened and pointed toward the coccyx. The uterus was large and could be palpated above the symphysis. Through the right fornix a large, tender, fluctuating mass could be perceived and the posterior fornix was depressed. Blood examination disclosed hemoglobin, 59 per cent., color index, 1; erythrocytes, 2,570,000; leucocytes, 14,800.

Operation, 3-11-09: Median incision in linea alba. Abdomen filled with blood, uterus fixed by adhesions. An oblong gestation-sac, situated in the right tube, was removed, leaving a portion of the tube and all of the ovary. A good portion of the blood and clots were removed by irrigation with salt solution and the wound closed. The diagnosis in this case was slightly obscured by the increased leucocytosis. Although the

greatly decreased number of erythrocytes would suggest the possibility of hemorrhage, occasionally the ectopic gestation will mark the first pregnancy and this, too, in women in whom there is no history of previous sexual disorder.

A woman, aet. 29, was admitted to the Jefferson February 2, 1909, who, with the exception of a malarial attack three years ago, had always enjoyed good health. Puberty was established in the thirteenth year; the period was painless and profuse, lasting four or five days, and occurring every twenty-eight days. The last period had occurred December 25th, 1908. She had been married eight years without becoming pregnant. A week prior to admission, she was seized with severe pain in the left lower quadrant of the abdomen, moderate prostration, nausea and vomiting. The symptoms entirely disappeared in a few hours and recurred more severely two days subsequently. A third attack occurred on the day of admission. A physician was called, who found her weak and prostrated. Vaginal examination seemed to disclose a tender mass in the left fornix, but as she fainted during the investigation, an ambulance was called to bring her to the hospital. Upon admission, she was apparently highly nervous, poorly nourished and under-sized. As she could speak no English and no interpreter was present, the history to be obtained was meagre. The lower portion of the abdomen was prominent, the hypogastrium and the left iliac fossa were tender, with some muscular resistance. An examination of the blood six days later revealed, hemoglobin, 68 per cent.; erythrocytes, 3,750,000, leucocytes, 7,400, color index, 9+. Operation the following day disclosed free blood and clots within the abdomen which had arisen from rupture of a gestation-sac in the left tube. The left tube and ovary were removed. The anemia, fainting, and the blood examination, despite the meagreness of the general history, were indicative of probable rupture of an ectopic gestation-sac.

The influence of pelvic inflammation in the etiology of ectopic gestation has long been recognized, and is particularly exemplified in the following history of a patient, whom I have twice had the privilege of operating upon for Dr. O. H. Hoffman, of Thomas, W. Va. In 1902, she gave birth to a child after an apparently normal labor and convalescence and eighteen days later developed an infection. Shortly thereafter, she underwent an abdominal operation in which the left ovary was removed and the right anchored, to support it from prolapse into the pelvis. She first came under my observation in 1906, when she complained of severe pains in the left side, which lasted over night and occasionally for forty-eight hours, and occurred every two to three weeks and during which she vomited freely. She was generally constipated. On August 30th, 1906, at the Jefferson Hospital, she underwent a curettement and had the abdomen opened through the old scar. The appendix was removed, the right ovary, which was large, was resected

and the right round ligament shortened to maintain the uterus in a forward position.

November 19th, 1908, she came under my observation at St. Joseph's Hospital, stating that after having missed four periods, she was some six weeks previously seized with severe, cutting, abdominal pain, associated with intense shock and cold sweats, from which she was revived in twenty-four hours. A week later another attack, but less severe, occurred, when she was curetted, after which the pain ceased. She had subsequently more or less abdominal uneasiness, a continuous leucorrhea but no bloody discharge; was very white, giving the appearance of having lost blood.

November 20th, 1908, the day following her admission, I opened the abdomen by a median incision, evacuated a large quantity of fluid blood and clots and removed a gestation-sac, consisting of the right tube with ovary attached. From the sac hung a three months fetus.

The cases given illustrate the difficulty in determining the diagnosis under ordinary conditions, and demonstrate how easily ectopic gestation, even at the point of rupture, when it occurs in the right tube, may be mistaken for appendicitis. Torsion of the pedicle of a small, broad ligament cyst on either side of the pelvis can readily lead to confusion. How much more readily, then, may difficulties confront the investigator when the patient has had previous attacks of pyosalpinx, inflammatory changes which have caused the intestines to form bands of adhesions, or been subjected to operations which have been followed by extensive adhesions or by hernia.

The next case is one pregnant with such possibilities that I consider it especially important that it should be recounted. A woman, aet. 39, was admitted to Jefferson Hospital February 1, 1909, who had undergone an operation for the removal of her appendix eleven years ago, which was followed by a fecal fistula. Thirteen months later she was subjected to operation for closure of the latter, but it proved ineffectual and was afterward overcome by cauterization. Four years ago she had intestinal obstruction, but her condition was regarded as too precarious to justify operation for strangulated hernia, so she recovered without it. She has been married five years and is reported to have had four miscarriages, all at six to seven weeks' duration, and one sixteen days ago. She menstruated regularly December 3, 1908, and subsequently, from subjective symptoms, believed herself pregnant. On January 16th, 1909, she had sharp, lancinating pain in the right lower quadrant of the abdomen, attending with profuse sanguineous discharge from the vagina. There were no clots. The pain was paroxysmal and exaggerated at night, and excruciating during micturition. The bowels were regular and there was neither vomiting nor nausea. Four days prior to admission she had a particularly severe attack which lasted ten hours, after which the pain disappeared until her entrance.

Examination: She was a heavy-set, well developed woman, who occasionally tosses in bed and moans with pain; pulse 72, respiration 28, temperature 99°. Abdomen large and muscles flabby. To the right of the median line there is an area 10 inches long and some 3 inches in breadth, a quite prominent bulging, a ventral or incisional hernia, in which the movements of the intestines could be observed, covered only by skin and peritoneum. Tenderness was marked over the right side of the abdomen, and adhesion of the intestine to the covering of the hernia was distinctly recognizable at the upper portion. Vaginal examination showed the walls of the vagina relaxed, the cervix soft, slightly enlarged and in the axis of the vagina, the right fornix slightly lower and quite tender. With the hand over the abdomen a large mass was palpable through it and a smaller one to the left. The uterus seemed enlarged out of proportion to the supposed period of gestation but, on account of the marked tenderness, the fundus could not be accurately made out.

Operation, 2-2-09: After thorough cleansing of the vagina and the surface of the abdomen, an incision ten inches long was made throughout the length of the old scar in the right lower quadrant, through the skin and fascia. On opening the peritoneum in the lower portion, the cavity was found to contain free blood and a large number of small clots. An artery in the right broad ligament had been opened and was still bleeding. This was the site of a ruptured ectopic gestation-sac, which when spread out was about two and a half inches in diameter. The pedicle was clamped and the mass removed, after which the structures were ligated. The uterus was large but in normal situation. The left tube and ovary were also large. There was a small fibroid on the left of the uterus low down. The intestines and omentum were in a mass of firm, quite vascular adhesions at the site of the old wound, and the small bowel was so intricately adherent to the abdominal parietes that it had to be separated with scissors. In breaking up the adhesions, the bowel was torn in four places, two small and two large rents. The abdominal cavity was protected as far as possible from fecal matter and the latter mopped away. The cavity was flushed with warm, saline solution. The omentum was broken away from the intestines at numerous places and the redundant omentum was ligated and excised. All bleeding points were ligated; the weakened portion of the small and also large intestine excised and united by Collins suture. The abdominal wound was closed with continuous catgut sutures, the first through the peritoneum; then silkwormgut sutures through all the tissues above the peritoneum and the other beneath the surface of the skin. The ends of these sutures were tied on either side over pledgets of iodoform gauze. Before they were tied, however, the aponeurosis was united with the same continuous catgut suture which was knotted at the upper angle of the wound. After tying the silkwormgut sutures, the skin was united by continuous catgut suture. The patient did fairly well for a few days, when the abdomen became distended and later there was a dis-

charge of fecal matter through the wound. This necessitated the re-opening of the wound, and as the amount of fecal matter was increasing, on the 10th of February all the sutures were removed, the cavity thoroughly washed out, the weakened portion of the intestine resected and again sutured, this time with black celluloid thread. As there was considerable sloughing of the abdominal wall, the intestines were packed with iodoform gauze and the wound treated as an open one. The patient was profoundly shocked after the operation but reacted under continuous proctoclysis with normal salt solution. She died on the 12th.

I have reported here a series of six cases, in each of which there was some variation from what might be considered as the normal or ordinary physiognomy of ectopic gestation. Five of the patients recovered and the fatal one died from conditions independent of the pregnancy. As the operation was not promptly done in any of these cases, it might be considered as an argument in favor of procrastination, but in none of these cases was the hemorrhage sufficient to, at any time of itself, endanger life. While I favor the selection of the time for operation in cases where it can be done without prejudice to the patient, I would not wish to be understood as advocating delay in all cases, as numbers of patients have succumbed to hemorrhage from the rupture of an ectopic gestation-sac in a very short period of time. It requires considerable courage to proceed to operation upon a patient who is apparently gasping for breath, and who is so exsanguinated that the pulse cannot be felt. Without operation, in such patients the only hope is in a clot forming in the vessel which will prevent further bleeding. Its preservation consequently precludes the employment of measures to rally the patient from the shock, as any measure which will increase the blood pressure endangers the driving out of the clot and the continuation of the hemorrhage. Such patients require very little anesthetic, and it is well to begin the procedure by having an assistant open a vein and commence transfusion of salt solution while the preparations are being made for the operation. In this way the operation is completed and the patient has the restoration of her force by filling up the bloodvessels. Very little time should be spent in the toilet of the peritoneum and in drying out the cavity, from the fact that it is unnecessary to remove all the blood. The first consideration is to secure the bleeding vessel. As soon as the abdomen is opened, a glass nozzle connected with an irrigating apparatus can be carried into the abdomen and normal salt solution flow into it during the time that the bleeding vessel is being secured; then see that the larger clots are washed out and allow the belly to retain the salt solution and fluid blood. This, absorbed, increases the amount of fluid in the vessels and gives the heart something to act upon.

When the patient comes under observation, after she has begun to recover from the shock and it is evident that the hemorrhage is arrested, the operator can take his time for the operation. Even in such

cases, it is unwise to delay any great length of time, for the reason that this condition occurs in patients in whom there has been, in the majority of cases, previous inflammatory trouble. There is consequently an opportunity for the effused blood to become infected from the tubes, and in those cases in which the intestines are more or less fixed by adhesions, the delayed peristalsis favors the retention of material within the intestines and the possible transudation through the intestinal wall of microorganisms to the enveloping collection of fluid, so that, in either of these ways, dangerous infection may result. It is true that some of these cases would recover good health without operative interference, but the possibilities of infection we have already mentioned make operation the most effective door of relief, as it removes the collection and saves the forces of the patient the necessity of taking care of it.

SOME POINTS OF INTEREST IN TUBERCULOSIS OF THE
LARYNX.

By CHARLES GRAEF, M. D., of New York.

Instructor in Throat Department, New York Post-Graduate Medical School and
Hospital.

There is probably no pathological condition in any part of the body which presents a more diversified picture than may be seen in a series of cases of tuberculosis of the larynx. Diagnosis is not made especially difficult by this fact, but treatment and prognosis are necessarily modified and many of the "suspiciously long lists" of curative agents which one may find named as successful by various writers on the subject, owe their reputation to the same fact.

In this short contribution I purpose limiting myself to those phases of the disease which are most likely to come under the observation of the practitioner and shall, therefore, limit myself to the consideration of some points in diagnosis, treatment, and prognosis.

Tuberculosis of the larynx is seldom, if ever, a primary matter. Some pulmonary lesion is commonly in evidence when the throat trouble is noted, and in such event diagnosis is comparatively easy. In other cases, however, the first signs of tubercular invasion present *here*, and these instances are sufficiently numerous to make early recognition a matter of much consequence.

Aside from a suggestive family history, perhaps no single early sign is of such importance as loss of voice. A patient who becomes husky at frequent intervals, with perhaps imperfect restoration of tone between the attacks, should be regarded as a likely subject and kept under careful observation. Miliary tubercle is the form in which the disease presents in the larynx, and frequently large numbers of small seed-like tubercles can be seen through the mucous membrane. As they increase in number, cell proliferation proceeds to the point of death from blocked nutrition, and softening, with spreading ulceration, ensues. Pallor of the mucous membranes is accordingly another very suggestive early sign. The grayish-yellow color of these tissues is very striking, and once observed is likely to be recognized in future cases. This pallor is seen not only in the lower throat but in the pharynx, and especially on the soft palate. In syphilis, malignant disease, and lupus, with which active tuberculosis of the larynx is most likely to be confounded, the membranes are injected and hyperemic.

Pain is rarely complained of until the disease is well advanced. In the early stages a dry, burning feeling in the throat is more often spoken of

by the patient, and this may be accompanied by an irritable, tickling cough, particularly troublesome at night when the patient is recumbent, or cause him periods of wakeful discomfort towards morning. The affection is more common in men than in women, and most of the cases occur between the ages of twenty and thirty-five years. To the early signs, in insidious cases, which I have mentioned, must be added the loss of appetite and energy, so familiar in many tuberculous cases, and nowadays, the result of one or more of the tuberculin tests must also be given due weight. Later, as the disease advances and ulceration is progressing, the pain and cough become severe from erosion of the nerve elements, or pressure from tubercle formation and swelling. Loss of function is also more marked and voice defects, depending on the location and extent of the changes in the larynx, vary from a degree of huskiness to complete aphonia. The lesions are most common on the back parts of the larynx, thickening of the arytenoids, which assume a characteristic "club-shape," being perhaps oftenest seen as the first sign. Ulceration of the epiglottis is also common and destruction of this part of the larynx has been, in my experience, a strong indication that the case would prove one of poor resistance and rapid progress to the end. Cases in which the cords are chiefly involved, especially if this is unilateral, the cord being affected on the side corresponding to the lung in which an area of disease is located, are more likely to respond to treatment. Examination of the sputum is not of much help except in the way of determining, by thus finding the bacillus, that disease is present in the lung. In laryngeal tuberculosis the bacilli are rarely located in the sputum. A brief résumé of the chief points by which tuberculosis of the larynx is characterized, and through which it may, in most instances, be distinguished from other diseases, is as follows:

The mucous membranes are pale. Health is generally impaired for some time before attention is drawn to the throat and in most cases there is previous or coincident pulmonary trouble. Its early appearance is most often on or between the arytenoids where the occurrence of small spots of induration is rapidly followed by marked edema. Ulcers are not deep but spread widely and are accompanied by pain in speaking, coughing and swallowing. Stenosis of the larynx is seldom seen and treatment with iodides is either without effect or, by increasing the edema, may aggravate the symptoms.

Prognosis: This has become distinctly better of recent years as the understanding and management of tuberculosis in general has improved. Only a few years ago a prominent writer on the subject felt justified in saying: "As a rule the prognosis can be given only on the basis of the weeks or months of life yet before the patient. The prognosis is most unfavorable." Such a dictum cannot be accepted to-day. Well-known workers in this field report that they have raised their percentage of cures from two to *twenty*, by modern methods. These consist chiefly in general hygienic measures, fresh air, nourishment, etc., and, locally,

the clearing away of the diseased tissue by curettage, followed by local applications, of which the best is probably lactic acid, or by galvano-cautery and subsequent healing applications. Recently some considerable success has been reported by those who have used tuberculin in suitable dosage, and I have personally had some promising progress in a few cases in which I have added a spray of the culture of lactic acid-producing bacilli, to the local treatment of tuberculosis of the larynx. It is, of course, too early to do more than mention it as a possibly useful material in this connection.

A difficulty in treatment of these cases is that the patient can, himself, do little toward effective medication of the part. Sprays and gargles practically have no more useful function than that of cleansing the pharynx, though with practice a patient may learn to reach the laryngeal disease with a good atomizer. He can aid the cure much by giving the larynx complete rest, and this is a point that should be strongly urged.

Pain is sometimes difficult to control, no single drug being effective in all cases. The juice of the ordinary pineapple is sometimes helpful and can be safely recommended for use by the patient. Of drugs, probably orthoform, either as insufflation or in ten grain doses in emulsion, is as effective as any if not quite the best. Cocaine, in 5 to 10 per cent. strength, sprayed into the larynx, gives ease but requires repeating at frequent intervals. Later in the disease, where treatment becomes largely palliative, morphine must be used. For the burning feeling already spoken of, a gargle or spray of equal parts of peroxid of hydrogen, extract hydrastis (colorless), and cinnamon or chloroform water, is very soothing. If dryness is a marked feature, an oil spray, of which benzoinol is a good example, should be prescribed.

1076 Boston Road, New York.

REFERENCES.

Kyle. Diseases of the Throat.

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CIRCUMSCRIBED SEROUS SPINAL MENINGITIS.

By M. A. BLISS, M. D., of St. Louis, Mo.

In the number for February 27, 1909, page 513 of the *British Medical Journal*, Victor Horsley writes a description of chronic spinal meningitis, and reports having performed laminectomy on a relatively large number of cases. His practice is to irrigate the subdural space with 1-1000 bichloride solution.

He mentioned the case of Spiller, Musser and Martin, published in 1903, and recently reviewed by Spiller in the *American Journal of Medical Sciences* for January, 1909, and a communication in April, 1907, from Prof. Krause, who described hydrops and meningitis serosa spinalis in 6 out of 22 cases referred to him as probably tumor. Horsley also mentions descriptions by Schlesinger and by Oppenheim.

Horsley says it is evident how closely these cases resemble tumor of the spinal cord, and he proceeds to describe a case convalescing at the time of lecture, which had shown a wide distribution of pain, with cramps in the leg and toes of the right side, the right toe springing up involuntarily with the pain. The pain had begun in the groin. For two years there had been tightness and numbness of both thighs, and slight dribbling of urine. Walking was chiefly limited by pain and stiffness and the tendency to involuntary contractions in the muscles of the lower limbs, especially the right. The patient had relative anesthesia of the entire right limb and the right hypochondriac region, as well as relative analgesia. There was no trophic lesion of the skin. On operating, a marked degree of chronic meningitis was found and it illustrated the fact that a unilaterality may be a feature which confuses the diagnostician.

Horsley discusses the circulation of the cerebrospinal fluid from the place of its manufacture in the ventricles of the brain downward, and suggests that it finds its way, under normal conditions, out along the lymphatics along the course of the nerve roots.

In the cases under discussion a large accumulation of cerebrospinal fluid is found around the cord, distending the dura, which does not pulsate when exposed. When the dura is slit the fluid spurts out and collapse takes place and the normal movements from cardiac and respiratory influences are established.

Horsley suggests both syphilis and gonorrhea as possible causes, but does not firmly establish either. He recommends washing out the subdural space with 1-1000 bichloride solution and leaving the dura unsutured.

The author has recently reported a case which falls under the heading of chronic spinal meningitis of Horsley. Spiller gives the condition the

name of circumscribed serous meningitis, and Prof. Krause, meningitis serosa spinalis. My own case was reported in the *Journal American Medical Association*, March 13, 1909, p. 885, under the heading of "Cysts Within the Spinal Canal."

Upon reading Horsley's paper, above mentioned, a somewhat wider view of the subject leads me to the conviction that these cases cannot perhaps be correctly designated as cysts, but rather as accumulations, more or less confined, of cerebrospinal fluid, which bring pressure to bear upon the cord and produce the symptoms of a more or less complete transverse lesion.

The really important point to be kept in mind is not so much that they may be more or less unilateral and resemble tumor, but that they are, according to present dominating text-book teaching, usually described as transverse myelitis and condemned to a life of paralysis and invalidism after futile medical treatment has been applied.

It would seem, from recent developments, that a very considerable number of cases of this character have gone on to death wrongly diagnosed, have even been wrongly interpreted at post-mortem, for the end results of the process may be like the end results of poliomyelitis—give little hint of conditions at the time of activity of the disease.

The happy results of operative interference in the cases described by Spiller, Horsley and others, and in my own case, and, on the other hand, the utter hopelessness of medical treatment, stirs one to look alertly for such conditions and to urge the surgical treatment of them.

While Horsley mentions lues and gonorrhea as most likely causes, my own case gives a very clear history of traumatic causation. The ordinary infections may play a role. Grip has been mentioned by Wood.

Whatever may be ultimately determined as to the most frequent causative factors, it is well to remember that the symptoms may come on insidiously and slowly. A history of intercostal neuralgia, of mild or severe type, is not unusual if the seat of greatest compression is in the dorsal region; if in the lumbar region, lumbago, anterior crural or other nerve group neuralgias, may occur primarily, to be followed later by a rather even anesthesia and analgesia, associated with cramping of muscles and increased deep reflexes, and by bladder and rectal signs. An upper limit of the lesion can usually be determined.

Humboldt Building.



J.I. GUILLOTIN

*Député à l'Assemblée Constituante.
Né à Saintes le 29 Mars 1738.*

Paris chez l'Auteur, rue du Théâtre Français N. 4.

GUILLOTIN.*

By FRANK J. LUTZ, M. D., of St. Louis.

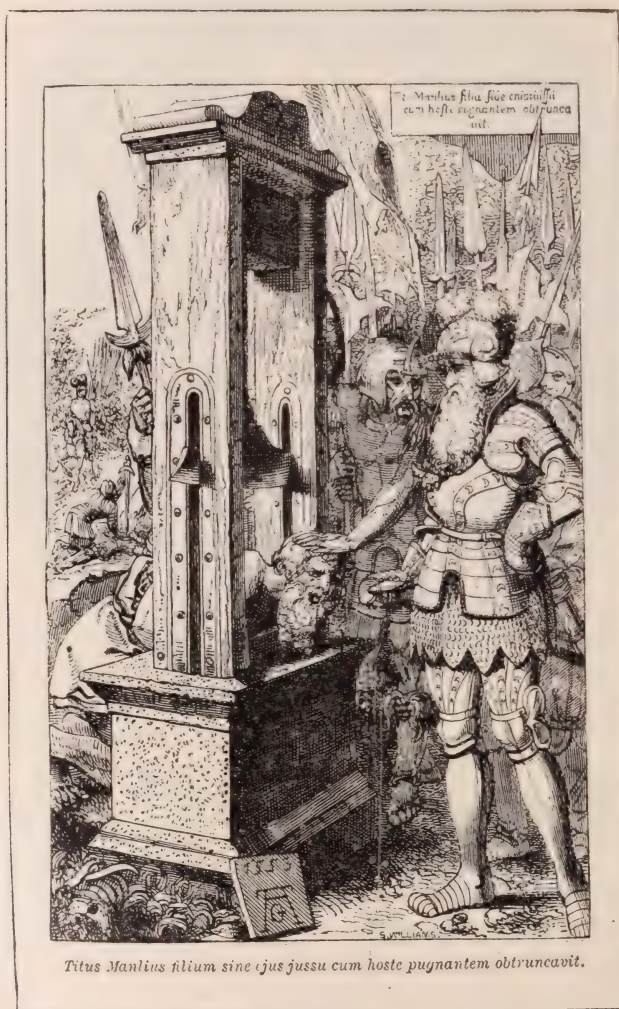
At the present time the attention of medical men is being repeatedly directed to the responsibilities of citizenship. The importance and necessity of discharging their public duties is more seriously considered each day, and the old spirit which prided itself on its ignorance of and indifference to matters political is fast giving way to conspicuous participation, on the part of physicians, in all the concerns of social life. The supercilious expression of contempt for those who in the past discharged their civic obligations is being steadily supplanted by manifestations of approval and admiration. The so-called "politician" has become the exemplar for and the leader of his profession.

During this time of great activity in considering public questions and the aroused medical conscience, it will not be amiss, I trust, to ask your attention this evening for the narration of the political activity, as representative of the medical profession, of the man whose name is unfortunately linked with the bloody emblem of the "Terror" of the French Revolution with a persistence unequalled in history.

The numerous biographers of Josef Ignace Guillotin have spared no pains to show that he was not, and could not have been, the inventor of the guillotine—a method of decapitation in vogue long before he was ever thought of, and in use during the Middle Ages in Italy, Germany, England and Scotland as well as in Paris; and even long before among the Romans.¹ It has also been stated that without the assistance of Guillotin, Dr. Antoine Louis and Schmidt, a German mechanic residing in Paris, erected the first machine on the Place de Grève, in April, 1792, after Guillotin's political career had been ended. It is well known that the instrument was called the "Louisette," after the permanent secretary of the Academy of Surgery of Paris, and also "Mirabelle," after Mirabeau, the orator of the French Revolution. In spite of these well-known and oft-reiterated facts, this same historic error has been and is being repeated abroad, as well as with us, almost daily. In the *Bulletin of the Johns Hopkins Hospital* for July, 1906, Dr. J. Chalmers Da Costa, in his readable sketch of Baron Larry, repeats it. Peper, in the *Journal of the American Medical Association*, January 4th, 1908, is guilty of the same mistake; even the great historian, Professor Pagel, of Berlin, an honorary member of the St. Louis Medical History Club, calls him the inventor of the guillotine and detracts additionally from

*A sketch read at a meeting of the St. Louis Medical History Club held under the auspices of the St. Louis Medical Society.

¹See illustration of instrument, page 342.



Copy of Henry Aldegrever's copperplate engraving which bears the date of 1553 and represents the death of the son of Titus Manlius, by an instrument in principle identical with the guillotine, though somewhat more decorated.

his reputation by telling us, in common with Saucerotte, that "he has written nothing."

But perhaps we should not wonder at this when we recall what another of his great countrymen, Victor Hugo, says: "There are unfortunate men: Columbus could not attach his name to his discovery and Guillotin could not detach his from his invention."

The origin of the word guillotine, newly coined as associated with the decapitating machine, is traceable to the doggerel of a royalist newspaper which was devoted to satirizing those then in power in the "Journal des Actes des Apôtres." The following lines are said to have been written by a member of the French Academy; they were sung after a well-known minuet melody, and appeared in its tenth number when the question of capital punishment was under consideration in the General Assembly:

"Guillotin,
Médecin,
Politique,
Imagine un beau matin
Que pendre est inhumain
Et peu patriotique.
Aussitôt
Il lui faut
Un supplice
Qui sans corde ni poteau
Supprime le bourreau
D'office.

C'est en vain que l'on publie
Que c'est pure jalousie
D'un suppôt
Du tripot
D'Hippocrate
Qui d'occire impunément
Même exclusivement
Se flatte.

Le Romain
Guillotin
Qui s'apprête
Consulte gens du métier,
Barnave et Chapelier,
Même le Coupe-tête;
Et sa main
Fait soudain
La machine
Qui simplement nous tuera
Et que l'on nommera
GUILLOTINE."

Guillotin,
 Physician,
 Politician,
 Imagines, one fine morning,
 That hanging is inhumane
 And hardly patriotic;
 Immediately
 He devises
 A mode of punishment
 Which, without cord or stake,
 Suppresses the office
 Of public hangman.

In vain it is published
 That it is pure jealousy
 Of a disciple
 Of Hippocrates
 Of the "Tennis-court,"¹
 Who flatters himself
 [That he can] murder with impunity
 And exclusively.

The patriotic
 Guillotin,
 Who is ready,
 Consults men of his kind—
 Barnave and Chapelier,
 And even Coupe-tête,²
 And his hand
 Makes of a sudden
 The machine,
 Which will "simply" kill us,
 And which shall be named
 GUILLOTINE!

¹The oath of the Tennis-court is a celebrated episode in the French Revolution. On June 20, 1789, the King, egged on by the Princes and the Bishops, issued an order to close the hall in which the National Assembly had convened for three days, the excuse being that the King needed the hall for a royalist meeting. This really meant his disapproval of the Third Estate. When the members met they were greeted by the King's guards who refused to allow them to enter, and upon their remonstrating, were told to read the order nailed to the door. Their indignation increased when they were refused admittance to a smaller hall in the same building. On the suggestion of Guillotin they took possession of a hall in a near-by street, which was known as the Tennis-court. Here the members took the celebrated oath which was drawn up by Barnave and Chapelier, and which really marked the first decided revolutionary step of the National Assembly.

²Coupe-tête was one Jourdain (afterwards more widely known for his share in the massacres of Avignon), who derived his title of Coupe-tête from having cut off the heads of two guardsmen, Des Huttes and Varicourt, who were murdered in the palace of Versailles on the 6th of October. The very patrons of massacre, Barnave, Chapelier and Coupe-tête, were themselves all massacred by the Guillotine.

Guillotin's activity as a member of the National Assembly has been thoroughly presented, more particularly by Chereau. It will serve our present purposes sufficiently to recite briefly such biographic data as will enable us to draw a correct picture of this high-minded and manly character, this penetrating and highly educated physician and clear-sighted, conservative statesman.

Josef Ignace Guillotin was born on the 29th of May, 1738, in Saintes (Département Charente—Inférieure) as the son of a lawyer. He attended school at Bordeaux; his talents and the creditable thesis which he presented and defended for the degree of Master-in-Arts attracted the attention of the then still powerful Jesuits to him, who gave him a professorship in their Irish College at Bordeaux. It appears that shortly before the order of the Jesuits was suppressed in France, he resigned his position and went to Paris to study medicine, where he was inscribed as a student in 1763, and attached himself more particularly to Antoine Petit. In 1768 he quitted Paris, obtaining his doctor's hat at Rheims, presumably on account of the large expense attached to securing the degree in Paris which, according to Liard, amounted to eight thousand francs or about sixteen hundred dollars of our currency. He immediately returned to Paris and competed for the position of "ward of the faculty," for which an endowment had been made by a former member of the Paris faculty and which, after a competitive examination, was awarded annually to a competent and needy student of medicine. He secured the coveted prize and thereby was admitted free to all the degrees which the faculty had at its disposal.

The following are some of the theses which he had printed about this time:

"An vesiculæ fellæ per ductum cysticum bilis mittatur?"

"An carbonum vapor in clausis cameris sedulo vitandus?"

"An ossa prope articulum fracta post. colli γερῆσι leni motu exercenda?"

"An pregnantibus, parturientibus et puerperis, nulla, aut saltem nisi lenientia remedia?"

On the 26th of October, 1770, Poissonier conferred the degree of Doctor of Medicine upon him, which gave him the right to practice his profession in Paris. It must be remembered that the medical faculty of Paris signified much more then than it does to-day. The entire guild of physicians possessing diplomas formed the faculty and from these graduated physicians the teaching corps of the medical faculty was selected. The number of those possessing diplomas was very small in proportion to the population, and in 1768 their number was only one hundred and forty-eight.

Those members of the medical faculty who were obligated to deliver regular lectures were called "docteurs-regents." They presided at the disputations and festivities and enjoyed various privileges and sources

of revenue, and might be compared with the ordinary professors of a German University.

Guillotin soon reached this regence, then the highest medical distinction, and enjoyed great popularity as a teacher. The important position which he held in the medical profession, and the influence which he exerted is shown by his selection by Louis XVI. as a member of the commission to which was entrusted the investigation and the furnishing of an opinion concerning a new method of healing, then violently agitating the people and the medical profession of Paris—animal magnetism—the wonderful cures of which had not only astonished and excited the populace but had penetrated the very circles of the Royal Court.

Mesmer had come to Paris in 1738, and the reputation of his universal remedy brought him a large *clientèle* and much gold. In his richly decorated salons, with mirrors extending from ceiling to floor, was erected, as upon an altar, the magnetizing *baquet*—a wooden tub containing all kinds of worthless things. The patients stood around this in a circle and touched each other as well as iron rods which extended from the *baquet* and which transmitted the “magnetic fluid.” Dim colored lamps, benumbing odors and soft musical tones perplexed the senses and excited the imagination. Cures which were effected and which we explain as the effects of suggestion, increased the reputation of the master infinitely.

Deslon, a distinguished member of the Paris faculty, and physician in ordinary to the Duke D’Artois, became associated with Mesmer, and according to his own statement, educated one hundred and sixty physicians, among them twenty-one members of the Paris faculty, in this new method of treatment, whilst Mesmer himself had more than three hundred pupils.

Deslon boldly proclaimed: “There is but one nature, one disease, one remedy and that remedy is animal magnetism.”

The great sensation which these doings created, and the many improprieties which occurred, induced Louis XVI. to demand, in 1784, a scientific opinion concerning this method of treatment. The Paris faculty elected four members, among them Guillotin, for the commission; and at its request, five members of the Academy of Sciences were associated with them: Lavoissier, the founder of modern chemistry, our own Benjamin Franklin, then at the French Court, and Bailly.

Mesmer objected to all commissions, but Deslon was more accommodating. The commission held its sessions, made its investigations and performed its experiments in a strictly scientific manner from March until August, 1784.

It would lead too far to give the details of the methods, thoroughly scientific, by which the commission reached its conclusions: which were, essentially, that animal magnetic fluid does not exist and that the means used to produce the nervous condition of those treated, are dangerous.

This "rapport des commissaires," was printed by order of the King and was distributed in thousands of copies. It has been translated into English and can be found in the Surgeon General's Library. It is remarkable for the clearness and elegance of its language and for the scientific presentation of the facts; and even after the lapse of a century and a quarter, is still worth reading.

Of course it is to the credit of Guillotin that his name is attached to this report, and although we do not know just what part he took in the work leading to the report, it is claimed for him that he suggested many of the tests and contributed much to the success of the investigation.

This report terminated the activity of Mesmer in Paris, which he left toward the end of 1784. Deslon attempted unsuccessfully to refute the report of the commission by a counter report, but did not succeed in preventing the Paris faculty from demanding, after the appearance of the report, that the adepts of Deslon should pledge themselves in writing to discontinue these magnetic methods of treatment; and seventeen of the twenty-one members so pledged themselves.

More serious matters, however, attracted the attention of the French. Louis XVI. had at last yielded to the long continued pressure of the *Parlements* and had convoked for the year 1789 the States-General, which had not met since 1614; and at the same time, he requested all learned and enlightened men to give expression to their views concerning the composition, as well as the scope, of the States-General. This opportunity was embraced most extensively. The liberal ideas which, owing to the writings of the encyclopaedists, of Rousseau, Voltaire, Montesquieu, and the influence of English and American experience, had become the common property of the educated people, found full and forcible expression on all sides. Guillotin, who heretofore had never taken any interest in politics, expressed his views in a pamphlet which suddenly made him the hero of the day, because, as Chassin has said (in the "collection des documents relatifs a l'histoire de Paris"), "it presented the views concerning the Third Estate with remarkable clearness and exemplary moderation."

This "petition des citoyens domiciliés à Paris," more quoted than known is, according to the same author, a political and literary work in all respects truly remarkable. It bears the date, December 8, 1788. The official representatives of the Parisian citizens, the "six corps de marchands" (those who sell the more choice merchandise) namely: the cloth merchants, the spice dealers, the mercers, the furriers, the jewelers and the wine merchants—at once made this pamphlet their own, distributed it in thousands of copies and placed it with the notaries for the collection of signatures. This resolution was adopted on the 10th of December, and thus Guillotin's pamphlet became the petition of the six corps.

In point of time, as well as in importance, it is among the first confessions of faith or, if you will, it is among the first political platforms which prepared for the Revolution. It demands by arguments based upon reason, upon law and upon historic tradition, in the name of the Third Estate, the correction of abuses, and demands also for the Third Estate at least as many representatives in the States-General as are accorded the nobility and the clergy. At the same time the language is respectful and the pamphlet is written from the view point of a monarchist. For proof listen to these closing sentences:

"Frenchmen, we who are separated into states but united by the same love of our country, present to Europe, the eyes of which are turned upon us at this time, the great and fascinating spectacle of the mightiest nation which stands united with its august leader, the greatest of monarchs, to work in unison with him upon the renaissance of the state. Let us present to this benevolent monarch a spectacle worthy of his heart—that of a great family which is united under the eye of the best of fathers."

On the 19th of December the Parliament of Paris, the supreme court, from the decisions of which there was no appeal, further increased the importance and effect of Guillotin's pamphlet by confiscating it; but it did not follow up the confiscation with punishment of the author. In Chassin's collection of documents, above referred to, the protocols of the transactions of the *Parlement* are printed for the first time and they show how, on the very eve of the Revolution, the pamphlet of Guillotin and its suppression gave rise to a discussion of the important question whether the liberty of the press, which had been guaranteed, implied also the right to petition and to meet.

The *Parlement* summoned Guillotin; he was subjected to examination; he declared that patriotism and consideration for the public weal, and not private interests, had prompted him to issue the pamphlet, and that he would gladly have allowed its author to remain anonymous. He said that he was prompted to present in simple, moderate and readily understood language his convictions, because most of the pamphlets which had hitherto appeared transgressed the boundaries of moderation and good sense, and that the six corps had adopted his pamphlet without knowing the author. The decision of the *Parlement* did not affect the contents of the petition, but declared that it was improper and beneath the dignity of the Notaries to have it exposed for signature in their offices. At the same time the *Parlement* despatched its president to Versailles and urged upon the King to hasten the convocation of the States-General. During the proceedings an immense concourse of people filled the halls of the Parliamentary Palace, circulated the petition, and signed it. When Guillotin left the building he was greeted with great demonstrations of applause, crowned with flowers and conducted triumphantly to his home. The petition appeared again in January, 1789, with the result of the deliberations of the Royal Council of the 27th

of December, 1788, according to which the Third Estate was given a number of deputies equal to those of the two other States combined, and with an address of thanks from the six corps, who were justified in claiming that this conclusion was the first fruit of their petition.

In the ensuing election, it goes without saying that Guillotin was elected as one of the representatives of the Third Estate, and when on the 5th of May, 1789, the convention was opened at Versailles, he sat as the tenth deputy for the good City of Paris.

After the convention of the States had been converted into the General Assembly, Guillotin became one of its most industrious and faithful members, and when the end of the General Assembly was reached, in 1791, it also terminated his political activity.

Concerning Guillotin's position in the General Assembly we might mention that his urbanity, his easy and polished manners, made him the choice of his colleagues as Inspector de la Salle; and on the first of February he was elected to the Presidency of the General Assembly—a position in which he acquitted himself with great satisfaction until the grave question of the Royal Veto was raised, which resulted in such a tumult that it became necessary for him to break up the session.

The unenviable notoriety which attaches his name to the guillotine has already been referred to, and we might mention here only that as an active participant and philanthropic deputy, Guillotin insisted that all punishments should be meted out regardless of the social rank of the criminal.

On the 10th of October he had proposed ten articles which established the principle that the privileged classes should not have capital punishment inflicted upon them by decapitation or by being quartered, hanged and tortured; and that decapitation should be the capital punishment for all by a simple mechanism—short, sure, and as painless as possible. His proposition also demanded that the heirs of the condemned should not be deprived of his property, nor suffer the degrading consequences of conviction then in vogue. On the first of December he defended these propositions in a lengthy speech, which was received with great applause, and which some of his biographers extol very highly, although upon what grounds does not appear, for neither in the official protocols nor in the newspapers of the day or in the National Archives can it be found.

Guillotin's greatest importance as a public man must perhaps be sought in the fact that with his liberal and yet moderate views he represented the purest type of the French medical man of his day, and of that elite of citizenship, whose stand in public matters has forced even so unfavorable a critic of the Revolution as Taine, to endorse it in words of highest praise.

Seventeen physicians were members of the National Assembly, where for the first time the medical profession came in contact with general politics in France. The Legislative Assembly of 1791 numbered twenty-two physicians among its members; the convention of 1792,

thirty-nine,—among them Marat, whose conduct is in marked contrast with that of his colleagues.

During the Terror, 104 physicians were executed; 328 physicians and 504 surgeons were expatriated.

However active the medical profession was in the affairs of the Revolution, and however honorably its members acquitted themselves, the scientific attainments of the French physicians at the beginning of the Revolution were of an inferior order. The teaching of the faculties was insufficient, and numerous abuses had crept into affairs in the course of time. The great cost of acquiring the degree in Paris has already been mentioned and it is, therefore, easily explained why six or seven promotions were the annual limit. It is true that in 1789 the faculty comprised 148 docteur-regents, but many of them did not live in Paris, and only seven were teachers, representing the chairs of physiology, pathology, pharmacy, materia medica, obstetrics, Latin and French surgery.

There were only 60 medical students in Paris. Montpellier, the most frequented of the French universities, had 100 students of medicine. Practical teaching had been entirely neglected. Every now and then a work of Hippocrates was read, but no dissections were made. In Paris only two cadavers were needed during the year for the course in operative surgery; and even in Montpellier dissecting consisted of demonstrations on the part of the teacher. Above all, there was no clinical instruction. The teaching body bore no relationship to the hospital, and obstetrics in its practical aspects was entirely neglected. Strassburg furnished a praiseworthy exception in practical instruction. On the whole it may be said that the physician left the medical school without practical knowledge; and as Diderot sarcastically remarked, "the physicians acquired the necessary skill only after murdering their patients in great masses."

Surgery had some excellent teachers and good courses, but in this department also the number of students was small and the surgeons in the country were considered incompetent and mediocre. This condition of affairs was especially felt in the country, and the encyclopaedists, and especially Vicq d'Azyr, lost no opportunity to criticize the faculties; and in all the *cahiers*,—the petitions which presented the complaints and wishes of the electors,—were urgent requests for reform in this direction. The declaration of the nobility of Montreuil-Sur-Mer expresses the prevalent opinion "that the ignorance of the country surgeons costs the state more citizens annually than it could lose in ten battles."

On the 12th of September, 1790, the National Assembly had, on motion of Guillotin, appointed a committee on public health. The following year, in 1791, Guillotin made a report in the name of his committee in which he proposed a plan of reform for medical education which would correct the existing abuses and which could easily have been carried out. According to this plan, large schools of medicine were to have been established in Paris, Montpellier, Bordeaux and Strassburg, each in con-

nection with a hospital in order that internal medicine, surgery and obstetrics might be learned at the bedside. Twelve professorships were to be established for medical physics and hygiene, anatomy and physiology, theoretical and practical pharmacy, botany and materia medica, theoretical medicine, history of medicine and forensic medicine, as also for the practical instruction in internal medicine, which was to have been given partly at the bedside, partly in an adjoining lecture room before and after the visits of the students to the wards. Similar provision was made for instruction in external diseases and obstetrics. French was to be the exclusive language in teaching and in the examinations. Lectures were to be free. The professors were to obtain their position by competitive examinations, etc. Finally Guillotin became the champion of the union of surgery with medicine and proposed, instead of all academic honors and titles, the simple appellation of "physician" for all licensed medical persons.

Although this plan, which was pronounced most excellent, seemed to meet the requirements of the time, it was not adopted but made part of the general plan of instructions submitted by Talleyrand and shared its fate.

The National Assembly was in the last days of its existence and seemed unwilling, or unable, to cope with far-reaching schemes involving the expenditure of large sums of money. Guillotin's report was printed under the title, "A Plan for the Teaching and Practice of the Art of Medicine." The radical Revolutionists, who in the National Assembly were in control, abolished in 1792 twenty-two universities, faculties and medical schools and thereby created perfect anarchy, which was relieved only after many complaints concerning the entire absence of physicians and the frightful news that within eighteen months the army had lost about six hundred physicians, and then in 1794 three *écoles des santé* were established in Paris, Montpellier and Strassburg. It was not until 1803 that, under the influence of Fourcroy, the French educational system was changed, whereby it became more efficient, and this remained in vogue until 1891.

After the adjournment of the National Assembly, Guillotin retired to private life. He remained a patriot of 1789, and was outspoken in his disapproval of the Revolutionary excesses which followed, and often repeated, in the circle of his friends, the words of Rousseau—that even the most just Revolution must be abhorred if it cost a single drop of human blood. He denounced in the most sarcastic terms the men of the Terror, more particularly Robespierre, and he protected, whenever he could, the victims of the Revolution. He gave them a refuge in his home, and often, although mostly unsuccessful, attempted to influence his colleague Marat in the interest of mutual friends. An emigrant, Count Mère, had been condemned to death and, before his execution, had recommended his wife and children to Guillotin. His letter fell into the hands of the authorities, who demanded of Guillotin information concerning their whereabouts, which he neither would nor could give. He

was arrested and the fall of Robespierre on the 9th Thermidor saved him from death. This arrest and incarceration may have given rise to the fable that Guillotin fell a victim of his own machine. It is said of him that even during the very height of the "Sansculottism" he firmly adhered to the powdered wig and three cornered hat; and Saucerotte relates that *his* father bought the busts of Henri IV. and Sully which, during the most dangerous period of the Revolution, ornamented the rooms of Guillotin.

After the fearful disappointments of his political life his indestructible faith in the progress of mankind sought its gratification in science. He collected the members of the old faculty into a scientific society, the *Académie de Médecine*, for which he obtained a meeting place from the authorities, as is seen from a letter of thanks which Guillotin wrote in 1811 to the President of the Consistory in which he says: "The *Académie* is composed of everything that is left of the former Paris faculty and a number of doctors of other French faculties; it is our intention to jointly labor for the greatest public good in the progress of medicine and in the upholding of the dignity of an honorable vocation, which has been reduced to so low a state by anarchy."

Guillotin was also an enthusiastic advocate of Jenner's great discovery. He was elected chairman of a newly created French committee for the propagation of this method of protection in France and in this capacity he asked, in 1805, in a splendid oration, the blessing of the Pope, who then resided at Fontainebleau, for this new philanthropic endeavor. It was printed by order of the Minister of the Interior.

He died on the 26th of March, 1814, in his 76th year, of an anthrax of the left shoulder. He married on the 15th of July, 1787, Marie Louise Saugrain, of the very respectable family of Parisian librarians, booksellers and printers. It is of unusual local interest that her brother was a practitioner of medicine in St. Louis.

Guillotin has not changed and enriched the medical or ancillary sciences as did his contemporaries Lavoisier, Pinel, Bichat or Corvisart, but he, nevertheless, rendered valuable services in his investigation of Mesmerism, and by diffusing knowledge in France concerning vaccination. By his example and political efficiency, as well as by his endeavors to promote reforms in the interest of medical education, he was a fine illustration of the true physician, a self-sacrificing politician, a patriot and a humanitarian. His spotless character as a man should make us proud to number him among us.

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MEDICAL AND SURGICAL PROGRESS.

SURGERY OF THE LARGE BOWEL.

A REVIEW OF RECENT LITERATURE.

By M. B. CLOPTON, M. D.

1. IDIOPATHIC DILATATION OF THE COLON.—Finney (*Surg. Gyn. & Obst.*, Vol. VI., p. 624).
2. HIRSCHSPRUNG'S DISEASE.—J. Petrivalsky (*Langenbeck's Archiv.*, Bd. LXXXVI., Hft. 2).
3. HIRSCHSPRUNG'S DISEASE.—Wagner (*Surg. Gyn. & Obst.*, Vol. VI., No. 6).
4. THE PHYSIOLOGIC IMPORTANCE OF THE DIFFERENT SEGMENTS OF THE LARGE BOWEL WITH REFERENCE TO ANTIPERISTALSIS.—Roith (*Mitt. a. d. Grenzg. d. Med. u. Chir.*, Bd. XIX., Hft. 1).
5. ACQUIRED DIVERTICULITIS OF THE LARGE INTESTINE.—W. J. Mayo (*Surg. Gyn. & Obst.*, Vol. V., p. 8).
6. ACQUIRED DIVERTICULA OF THE SIGMOID.—Telling (*Lancet*, March 21 and 28, 1908).
7. ACUTE DIVERTICULITIS OF THE SIGMOID.—Brewer (*Journ. A. M. A.*, August 15, 1908).

Although recognized for many years, Hirschsprung's idiopathic dilatation of the colon has received much the most attention from authors in the past few years, particularly because the treatment has become largely surgical. The clinical picture is usually clear and pronounced, the cardinal symptoms being obstinate constipation and a distended abdomen in a patient in otherwise fairly good health. The disease is usually of early life, even immediately after birth, and continues throughout life. Bowel action rarely comes except after cathartics or enemata, and the intervals between stools may be from a few days up to months. Occasionally, diarrhœa may alternate with this constipation. The distention of the abdomen may be enormous, which is more marked by the contrast to the emaciated body. The colon can sometimes be outlined through the belly wall, and peristalsis is frequently plainly followed, and borborygmi are often loud. The fecal discharges vary, at times dry and inspissated, at other times putty-like, with a peculiar, offensive odor. It is a disease rarely rapidly fatal, but the patient leads a precarious existence owing to malnutrition and digestive disturbances incident to the trouble. The medical treatment is such as used for chronic constipation. The surgical treatment varies much. The operation of choice is resection of the affected portion of the colon with a subsequent entero-anastomosis, which has been successful in 14 out of the 22 cases in which it has been performed. Colostomy has been done 23 times and as a preliminary to radical operation is valuable. Coloplication in a number of cases has not given satisfactory results. Colopexy has been fairly satisfactory, but

is occasionally a failure. Entero-anastomosis without resection does not prevent a continued collection of feces in the distended loop, but in most cases it has given good results.

Finney reviews the whole subject, particularly noting in detail the various theories advanced to explain the condition such as (1) distension accompanying an abnormally long mesentery, which allows torsion of the sigmoid (in only a comparatively few cases has this found to hold); (2), as a congenital development both as to the dilatation and the hypertrophy (Hirschsprung); (3) as due to a colitis, which becomes chronic, and distension follows abundant gas production (colitis described by most observers is a late manifestation); (4) as due to an increased length of the colon with an exaggeration of its loops (this may explain some of the cases in adult life or in the insane with marked coprostasis); (5) as due to a mechanical obstruction (many cases have failed to show this); (6) as congenital aplasia of muscular tunics above the rectum, with gas and feces not getting by, later an hypertrophy of the colon with much fibrous tissue forming, due to toxic irritation; (7) as spastic contraction of sphincter with fissures (rarely seen); (8) as a neuromuscular defect in one segment of the colon with paralysis, similar to phantom tumors; (9) as due to valve formation of the intestine. Finney reports a case of a 9 year old child operated upon, with cure, by first doing a colostomy above the dilatation, which begins at the hepatic flexure, then, later, the child being much improved and the colon much smaller, making an anastomosis of the ascending colon and the lower sigmoid, leaving the excision of the whole dilated colon until some months afterward. The colostomy is left open as a safety valve until the series of procedures are well over, and then closed. In this case he believed the dilatation congenital. He also reports on eleven cases that have been treated in the Johns Hopkins Hospital. The whole subject is exhaustively treated, covers 206 reported cases and is accompanied by a complete bibliography.

Petrivalsky had an opportunity of making an autopsy on a case of true megacolon and came to the conclusion that the whole intestinal canal is involved, and not only the colon, both being much shorter than usual, and the mesentery was histogenetically weak and lacking in elasticity, the dilation and hypertrophy of the bowel walls being consequent. In a case of symptomatic megacolon, due to an abnormally long sigmoid, which became twisted, he did not find this microscopic change.

Wagner reports a congenital case in a child 2 years old, with an enormous belly and suffering from constipation. There was marked colonic peristalsis, and in operating for excision of the whole colon he found that the sigmoid was U shaped and very large, terminating abruptly in a normal rectum, at which point there was a kinking. The child died of embolism at the end of 32 hours, but the intestinal condition was good.

Ito and Soyesima have seen two cases, which have been relieved by surgery. The first was a 14 year old boy, who from birth had suffered with incontinence of feces, particularly when in bed. In every way he presented a typical picture of the disease. The first operation was a lateral anastomosis between the lower part of the ileum and the upper part of the rectum, which improved the condition, but did not prevent a stasis of the feces in the distended, side-tracked colon. Two months later a second operation was done, excising the colon leaving about 20 c.m. of the lower end of the large bowel. The cure was complete. The second case was considered a pseudo-megacolon, and occurred in a child 4 months old, who since birth had alternated between complete obstruction with distention, and free movements. At operation a long,

twisted sigmoid was found with an enormously dilated colon. An artificial anus, which later closed spontaneously, cured the condition.

By clinical observation and experimentation on animals Roith comes to the conclusion that the larger gut in part has a reverse peristalsis, which is found in the cecum, ascending colon and the first part of the transverse colon. The distal part of the transverse and the descending colon have no antiperistalsis, but there is a slight reverse in the sigmoid. This accounts for the fact that the contents remain longer in the ascending colon and sigmoid than in the last part of the transverse and descending colon. On account of this reverse peristalsis of the ascending colon it is better, in operating, to excise the cecum to make the anastomosis of the ileum to the transverse colon beyond its middle. A colostomy had best be made at the junction of the descending colon, and the sigmoid, while a permanent fistula should be made in the neighborhood of the left flexure.

In the descending colon and sigmoid between the splenic flexure and rectum, acquired diverticulæ are now recognized as occasionally calling for surgical interference. The cases group themselves into (1) those in which an intraperitoneal abscess forms, with spontaneous evacuation into a neighboring viscus, or evacuation externally through operation; (2) those cases giving rise to acute or chronic obstruction, when at operation the inflammatory changes give a picture impossible, many times, to distinguish from carcinoma; (3) those in which the symptoms are mild and recovery occurs spontaneously. The condition is found usually in constipation where hardened feces become impacted in a diverticulum, which occurs in people beyond 50 years with a tendency to obesity where there is a weakened musculature. The treatment according to Mayo, depends on the condition present. Local suppuration must be treated by free drainage. If acute obstruction develops a temporary anus should be made. If a considerable tumor is present it is best to make a primary resection of the affected bowel. Three cases of internal fistulæ with the bladder are reported, two cases with abscess or external fistula, and five instances where a well-marked tumor appeared in the left side, three of them suddenly, with inflammatory symptoms, and in all five of the cases the colon was resected, and in each the gross appearance was that of carcinoma, but subsequent examination showed no malignant disease was present. A number of cases in elderly, obese people, were symptomatically diverticulitis but after a thorough cleaning of the bowel the symptoms subsided.

In an extensive article Telling reviews the subject especially in relation to the secondary pathological processes and their clinical symptoms. He believes that no one factor can bring about the condition, but notes constipation as extremely common, together with venous congestion, and the added factor of muscular weakness, allowing the process to start about the points of entrance of the vessels through the gut. The secondary processes of the acquired diverticula, are liable to include infection of the general peritoneal cavity through thinning of the walls of the diverticula or perforation, a chronic proliferating inflammation with thickening of the gut wall and stenosis of the bowel. Adhesions may form especially to the small bowel and the bladder. Vesico-sigmoid fistula is due to acquired diverticula and is a condition of some frequency; it is met surgically by a palliative preliminary operation like colotomy, or by undertaking a radical operation in the first instance.

Brewer believes that the course of the disease is so similar to appendicitis that the treatment should be the same, closing off the stump of the diverticulum if possible, and if pus is present draining the wound.

THE OPHTHALMO-REACTION FOR TUBERCULOSIS FROM THE STANDPOINT OF THE OPHTHALMOLOGIST.

A REVIEW OF RECENT LITERATURE

BY JOHN GREEN, JR., M. D.

1. CALMETTE'S OPHTHALMO-REACTION FOR TUBERCULOSIS—Weber (*Med. Press*, August, 1908).
2. THE STATUS OF THE OPHTHALMO-REACTION TO TUBERCULIN—Appleman (*Therap. Gaz.*, September, 1908).
3. THE CONJUNCTIVAL TUBERCULIN TEST—Mannheimer (*N. Y. Med. Jour.*, September 5, 1908).
4. ON THE SYMPTOMS AND THE COMPLICATIONS OF THE "OPHTHALMO-REACTION TO TUBERCULIN"—Aubineau (*Ann. d' Oculist*, July, 1908).
5. OCULAR LESIONS PRODUCED BY THE OPHTHALMO-REACTION—Adam (*La Clin. Ophthalm.*, June 25, 1908).
6. THE OPHTHALMO-TUBERCULIN TEST: TWO SEVERE REACTIONS—McKee (*Montreal Medical Jour.*, October, 1908).
7. EVIL CONSEQUENCES OF CALMETTE'S REACTION AND THEIR PREVENTION—Seligmann (*Zeitschr. f. Augen-h.* XX. 1908, p. 130).
8. THE DANGERS OF CALMETTE'S OPHTHALMO-REACTION—Butler (*Brit. Med. Jour.*, August 8, 1908).
9. ON THE VALUE OF THE OPHTHALMO-REACTION IN THE DIAGNOSIS OF TUBERCULOSIS—Gillie (*The Australian Med. Gazette*, May, 1908).

Weber concludes that the ophthalmalmo-reaction in its present stage is of only limited diagnostic value and may cause serious damage to the eye. A first instillation may be negative and a decided reaction follow a second instillation a week or ten days later. This may occur in perfectly healthy subjects.

The ophthalmalmo-reaction may be of value to determine whether a tuberculin preparation, introduced by the mouth or rectum, has been absorbed into the general circulation. In the latter case the conjunctiva, on which the ophthalmalmo-reaction has been tried a week or two previously, will become reddened just as it would were tuberculin to be injected underneath the skin.

The difficulty in securing uniform results is, according to Appleman, in part due to the failure as yet to obtain a tuberculin which may be considered of standard, uniform strength, and until this is done there must be more or less variability in the conclusions of various observers.

Contraindications to the use of the method are enumerated by Mannheimer as follows: "Any existing disease of the eyes, except errors of refraction or any tendency thereto; or traces of previous disease; scrofulous children; hay fever; ordinary colds; perhaps also the administration of iodids." He concludes that the conjunctival test has fulfilled rea-

sonable expectations, though it exhibits discrepancies as yet unexplainable. It requires caution in its application and interpretation. It should be used judiciously so as not to bring it into discredit.

Aubineau believes that the complications of the ophthalmo-reaction are rare and generally slight when there are no recent or old lesions of the eye. These complications are relatively frequent when the eye presents lesions, either recent or old; and that the method should be absolutely rejected for eyes that present either tuberculous manifestations, or affections such as ulcero-vascular keratitis and the phlyctenular diseases of infancy, which may be more or less directly connected with tuberculosis.

Among the more serious complications are involvement of the uveal tract, lesions of the bulbar conjunctiva similar to pustular ophthalmia or to the proliferations at the limbus of vernal conjunctivitis or to patches of episcleritis, a prolonged folliculitis or vegetations on the tarsal conjunctiva and ulcerations of the cornea followed by opacities.

Adam has noted the appearance of small hemorrhages following tuberculin instillations in healthy eyes. In scrofulous infants phlyctenulæ may occur. The occasional occurrence of keratitis is alluded to.

Out of a series of 200 tests McKee met with only 2 where severe reactions were seen: One, a case of membranous conjunctivitis, the other a muco-purulent conjunctivitis followed by phlyctenular keratitis. Both made good, though tedious, recoveries. He concludes that the results of the test are, as yet, contradictory.

Seligmann records a peculiar sequel hitherto undescribed. A girl, aged 20, presented, seven days after the instillation of a 0.5 per cent. solution, a purulent conjunctivitis palpebraris and three large marginal phlyctenules. Here and at the semilunar fold, a large number of small, light, or opaque yellowish, partly prominent, nodules were imbedded. A month later the phlyctenules had disappeared, but the whole periphery of the cornea was dotted with miliary nodules to which blood vessels radiated from all sides. The whole ocular conjunctiva was covered with miliary yellowish nodules, and under the epithelium of the cornea white punctiform infiltrations were noticeable. The suppuration was not toxic, as the pus was almost free from microbes.

Microscopically these miliary nodules consisted of subconjunctival, circumscribed, round-cell infiltrations with necrosis and giant cells, but no tubercle bacilli. Inoculation of a guinea pig was negative, hence Seligmann concludes that the nodules were produced by the dead bodies of bacilli, or their endotoxins. Water irrigations were used to remove mechanically the remnants of tuberculin. In addition, 1 per cent and 2 per cent solutions of glycerine, which, according to Koch, is the best means of extracing tubercle bacilli, were instilled. This relieved the symptoms rapidly, and Seligmann recommends it not only as a therapeutic, but also as a prophylactic, in all tuberculin instillations, immediately after the reaction sets in, to avoid future serious complications.

Three disastrous experiences with this method have led Butler to abandon his previously expressed opinion that "if the eye used for the test was healthy, there was no danger to be feared from a 0.5 to 1.0 per cent solution of tuberculin."

In the first case reported a typical tuberculous process was set up in a perfectly healthy eye, resulting in the formation of a central corneal nebula; in the second, a violent reaction was followed by a chronic conjunctivitis and a persistent phlyctenule; in the third, a violent muco-

purulent conjunctivitis occurred which resisted all treatment for two months.

A number of novel points have been brought out by Gillies. His deductions were drawn from 129 tests made in 103 individuals. Of the primary instillations, 53 cases gave a positive and 50 a negative result. The second instillation made before the eighth day after negative primary instillation, gave no reaction in eight cases; while three out of four cases gave positive results when the instillation was made on the ninth day after primary instillation. The same was true also in cases where the secondary instillation was made later than the ninth day.

From these cases it appears that it is perfectly safe to repeat the test where any doubt exists, provided it be done within seven days of the first test. A positive result on repeating the instillation after nine days invariably occurs whether the patient be tuberculous or not.

These results are explained on the assumption that a condition of anaphylaxis is produced by the first instillation. The latent period—nine days—agrees with the latent period found in experimental production of anaphylaxis in animals. How long this condition of anaphylaxis lasts cannot at present be stated, but certainly as long as a month.

From a practical point of view this fact is of the greatest importance. It is absolutely necessary when this test is applied that the patient be clearly informed as to what has been done, otherwise repetition of the test in ignorance of the previous instillation must lead to serious mistakes in diagnosis.

Another point of practical importance is that disappearance of the reaction in a case of arrested tuberculosis means that not only has the tuberculous process ceased, but that sufficient time has elapsed for the tissues to lose the anaphylactic condition conferred by the disease when active.

In a number of cases the subcutaneous injection of tuberculin as a confirmatory test evoked a recrudescence of the ophthalmo-reaction, often of considerable severity. It seems probable that injection should be performed within eight days to avoid an anaphylactic reaction.

The authors reach the following tentative conclusions:

1. A positive ophthalmo-reaction where a 1 per cent. solution of Calmette's tuberculin is used, in the absence of secondary syphilis and possibly convalescent enteric fever, is diagnostic of the presence of an active or recently quiescent tuberculous focus somewhere in the body.
2. A negative reaction does not definitely exclude tuberculosis, but is strongly against its presence, the margin of error being about 13 per cent.
3. The ophthalmo-reaction is as reliable as the ordinary tuberculin reaction, is readily carried out, involves little discomfort and no loss of working time to the patient.
4. The reaction is of no value unless it is certain that the eye has not been previously tested.
5. Where the original reaction has been negative it may be repeated within eight days and a positive result accepted.
6. Where doubt exists as to the correctness of the reaction, confirmatory injection, if done, should be performed within eight days where the reaction has been negative, and five days where positive.

A NEW CONTRIBUTION TO THE THEORY OF DISPLACED EMBRYONIC CELLS CAUSING THE GROWTH OF TUMORS.

A REVIEW OF RECENT LITERATURE.

By CARL FISCH, M. D.

THE GROWTH OF EMBRYONIC SUPRARENALS IN THE ADULT KIDNEY.—Hugo Neuhäuser (*Deutsch. med. Woch.*, 1909, No. 8).

The reviewing of a single paper in this department may be excused because of the great importance of the contribution in the problem of the origin of tumors, especially of carcinoma. The paper by Neuhäuser confirms, it must be admitted, in only a single instance, the origin of a malignant tumor formation from fetal tissue in the adult animal. Of all opinions on the genesis of tumors, none so far has been accessible to experimental evidence. Cohnheim's suggestion that the origin of most tumors is traceable to the changed location of fetal tissues, or cells, is the only theory that, if proven to be correct, even by a single observation, would suggest the probability that perhaps all other tumors, particularly those of a malignant character, must be interpreted in the same way. Indirectly the absolute specificity of the character of carcinoma has been definitely shown by Bormann in skin carcinomata, where the location, in the first place, in 90 per cent. of all cases, is found in areas which anatomically and embryologically, almost compel the displacement and separation of epithelial cells from their physiologic arrangement. The examination of these areas in fetal and adult stages shows in many cases the presence of epithelial complexes without connection with the surface epithelium; in fact, if the examinations were extended to every single individual, we would be able to demonstrate this condition in every one of them. Bormann has shown, with uncontradictable certainty, that 90 per cent. of skin carcinomata arise only in such areas. Of course, the finding of such displacements in normal individuals on one hand and on the other hand the appearance of carcinoma in the same location in nearly all cases, is theoretically not conclusive. What does make it more binding is the fact that in no case can it be proven that a cancer has arisen through changes of normal epithelia. Bormann has demonstrated that in the naso-labial fold, typical carcinomata can be found, representing in the section only about forty cells, that, of course, must be, as it is called, very early, or better are the commencement of growth of tumors. Especially in these microscopic tumors the absolute histologic difference from the neighboring epithelium is so definite that its origin or transition from normal epithelium is absolutely excluded. The same obtains for all other carcinomata of older age; if properly studied, it will always be seen that the tumor only grows by proliferation of its own cells; that it never forces surrounding tissue to become a tumor, a transition of normal tissue into tumor tissue cannot be demonstrated, in spite of the positive assertions of Hauser. The cells producing a tumor must be different from the normal and physiologically coordinated cells. That this mor-

phologic, physiologic and so-called biologic coördination of all tissues or their cells to each other is the basis for their character in the normal tissue, is shown in no better way than by the growth of the epithelium of the skin, where the physiologic loss of tissue is always replaced by a physiologic and adequate new formation, always within the limits of normal processes. Remove a fragment of this epithelium, transplant it to a denuded area of the skin, and its capacity for growth will be far greater than it was in its original location. It will not only cover the denuded surface but actually cover an area a hundred times larger than its original size. If from this transplanted growth successive transplantations are made, the transplant being used from one to the other, the chain of new formations is endless and will result in a long series of consecutive transplantations to a mass of newly formed epithelial tissue, in volume exceeding enormously that which primarily led to the proliferation. On the other hand, this proliferation stops in the first transplantation as soon as the surrounding normal epithelial tissue comes in contact with it, thus establishing the action of the physiologic, perhaps simply physical, relation of the regulating influence of the cells of a tissue on each other. This regulating influence cannot be exerted in cells displaced from their normal connections. They either find conditions in their abnormal surroundings not suited to their specific needs, or find sufficient means to persist as displaced complexes.

While, of course, the concatenation of the established fact of misplacement of fetal tissue in locations where, with predilection, tumors later arise of the type of the misplaced cells, with the origin of the tumors themselves, has been, so far, only a *post hoc propter hoc* conclusion, the numerous attempts that have been made in this direction have been uniformly unsuccessful. It has in some experiments been possible to produce, by the implantation of fetal tissue, formations of the character of teratomata. None of them, however, has exhibited the characteristic of tumors, an independent, continuous growth at the expense of the organism of the host. They soon met the fate of atrophy and elimination. That tumors can arise by transplantation of tissue in other locations, is a well-known fact, proved by the experiments of Schmieden with transplantation of suprarenal tissue into the kidneys. The result was the growth of hypernephromata, such as occur so often in human pathology, first interpreted by Grawitz. The interpretation of their being congenital in genesis cannot be contradicted by the methods of to-day of making conclusions from scientific work.

This extensive preliminary discussion is necessary to emphasize the importance of the result of the experiment made by Neuhaeuser. His investigations began with suprarenals taken from fetuses of rabbits in a very early stage. In twenty cases of transplantation the result was negative. The minute transplanted organs, of the size of the head of a pin, into the kidneys of adult rabbits, could not be seen with the naked eye, after five weeks; certainly they had not increased in size. Later he used the same organs from fetuses near the end of pregnancy. Each of the two suprarenals of a fetus was implanted into each kidney of an adult rabbit. While in one of them no distinct growth could be found, the other showed a very surprising condition. The shape of the kidney was not changed, but on section the lower two-thirds appeared normal while the upper third was changed, more or less, into a tumor-like mass. The implantation was made five months before the examination. Seemingly the tumor is sharply defined macroscopically, but microscopically it is surrounded by an area of degenerated and inflamed kidney tissue,

that is present also between the multiple nodules of the tumor of which it is composed. These nodules on section protrude above the surface and have a yellowish color. They are separated by septa. The capsule of the kidney covering the tumor is intact. The nodules of the tumor are numerous and one of the smaller ones represents about the size of the implanted suprarenal tissue.

The microscopic study shows the character of the cells of these masses to be identical with those of the normal tissue. A difference consists in the deeper staining capacity of the cytoplasm and in some greater density of it, than in the normal gland. That they are identical with the cells implanted, is evident. Much more interesting is the stroma of the tumor. It consists of connective tissue, fibroblastic in character and with infiltration (moderate) of mononuclear cells. In it are found single tumor cells and smaller and larger nests of such, situated in lymphatic radicles and in blood-vessels. One picture shows the first stuffing of a blood-vessel by the tumor cells and single groups in a branch of this vessel. Without knowing from what source the pictures have been procured, the impression is given that they are identical with the well-known pictures of the infiltration of a carcinoma of the suprarenals in surrounding tissue conveyed by the lymphatic and blood channels. The same course of metastatization is known for the malignant hypernephromata of man, that frequently produces metastases by venous circulation. The destructive nature of this tumor is shown by the finding of remnants of kidney tubules within the masses of tumor cells. There is, therefore, no doubt that the implantation of a fetal suprarenal into the kidney has resulted in the growth of a malignant tumor, a carcinoma. The direct connection between these two facts cannot be doubted and must be considered as so-called absolute evidence for the possibility of embryonal cells, under suitable conditions, to be the causative factor in the production of tumors. A single observation, of course, cannot be taken as evidence for a generalization of the opinion of the genetic origin of tumors. There is, however, no doubt that continued investigation in this direction will soon multiply the number of positive results and thus clinch the evidence scientifically. The difficulty obtaining in this investigation is, naturally, our total ignorance of the physiologic, or biologic, if you please, processes that are going on in such phenomena. Experimentally it may be possible to perfect the method and, in a certain way, establish a theory or explanation.

The author is very conservative in his conclusions and summarizes the justifiable deductions to be drawn from his report as follows:

"The transplantation of a minute fetal suprarenal has formed a growth that has taken the place of the whole upper third of the kidney. It is composed of tumor nodes and typical nests of epithelial cells. The nests of cells are invading the surrounding tissue; they infiltrate into it and cause destruction of the renal parenchyma by pressure. The tumor not only grows by continuity but has a metastatic property by entering the blood-vessels. The cells carried off with the blood will cause new nodules (metastases) in other parts of the organ. The cause of the growth of this tumor is only the independent proliferation of fetal tissue, severed from its normal connection and transplanted into foreign tissue. If then, perhaps, some features of malignant cells in man are missing, one conclusion may be made with confidence, that the separation of tissue, either artificially or naturally, in the growing fetus, can lead to a disposition toward later tumor formation; these cells must be recognized as the final cause of at least certain tumors, and by my experiments the truth of Cohnheim's or Bibert's theory is made probable and accessible to investigation."

DIAGNOSTIC AND THERAPEUTIC NOTES.

A NEW TEST FOR MUCUS IN THE STOOL.—Hecht (*Wien. klin. Wochenschr.*, 1908, No. 45).—The detection of mucus in the stool, while of considerable diagnostic importance, is not always an easy or a pleasant matter. Hecht's test simplifies the search for mucus greatly. His reagent consists of an aqueous solution of 2 per cent. brilliant green and 1 per cent. neutral red. A drop of this is mixed with a small portion of the stool and a little of the mixture examined between slide and cover-glass. The bulk of the stool is stained green while the mucus is stained red.

TEST FOR BLOOD IN THE FECES.—Messerschmidt (*Muench. med. Wochenschr.*, 1909, No. 8).—The method recommended by the writer is a modification of the Schlesinger-Holst benzidin test. Dissolve a few grains of benzidin in 2 c.c. glacial acetic acid. Rub up a piece of solid feces, the size of a pea, with 2 c.c. of water acidulated with a few drops of glacial acetic acid. To 3 drops of this suspension add 1 c.c., 3 per cent. peroxide of hydrogen, shake and add the same amount of the benzidin solution. A greenish-blue color will result if blood be present.

TREATMENT OF COLLAPSE BY MEANS OF INTRAVENOUS INJECTIONS OF ADRENALIN.—Kothe (*Therap. d. Gegenw.*, 1909, No. 2).—Adrenalin exerts a tonic effect, not only upon the blood vessels, but also upon the myocardium. The writer has used adrenalin (epirenan) intravenously, in a variety of conditions of cardiac weakness, with marked success. The reports mention cases of collapse following spinal anesthesia, post-operative shock, severe hemorrhage and diffuse peritonitis. He injected into a vein from 10 to 20 drops of a 1:2000 solution of adrenalin, sometimes diluted with normal saline solution, sometimes not.

THRESHOLD PERCUSSION OF THE STOMACH.—v. Koranyi (*Ztschr. f. klin. Med.*, Vol. 67, Nos. 1-3).—The method of extremely gentle percussion, first introduced by Goldscheider, and by him named "threshold percussion," has proved particularly useful in determining the true outlines of the heart. Koranyi finds it equally useful in outlining the gastric bubble, *i. e.*, the larger or smaller bubble of air present in every partially filled stomach. This mass of air changes its position with the posture of the patient, so that by percussing it out, first in the erect, then in the prone, and finally in the lateral posture, the true outlines of the stomach can readily be determined.

SIGNIFICANCE OF THE CONJUNCTIVAL TEST IN TUBERCULOSIS.—Wolff-Eisner (*Muench. med. Wochenschr.*, 1908, No. 45).—The originator of the conjunctival method; in this article sums up the result of his experience in 4,000 cases. He believes that while the old subcutaneous

method and the newer cutaneous one of v. Pirquet are specific for tuberculosis, their very delicacy interferes with their clinical value in adults, inasmuch as they are positive in latent or even completely healed tuberculosis. The conjunctival method on the other hand, if positive, indicates an active tuberculosis. If a positive reaction is obtained in a clinically healthy individual, the suspicion of a tuberculous process is justified. A negative reaction, on the other hand, does not necessarily indicate the absence of a tuberculous process unless the patient is clearly not very ill. The more advanced the cases, the more usually the conjunctival reactions will be missing. Absence of the conjunctival reaction in the presence of a definite tuberculous process justifies a bad prognosis.

AN AID TO THE DIAGNOSIS OF ATONIC DILATATION OF THE STOMACH.—Carnot (*Presse méd.*, October 28, 1908).—Carnot's method for the detection of gastric atony depends upon the fact that in this condition the pylorus is patent. The patient's stomach is emptied by means of the stomach tube and 500 c.c. of water introduced. The patient remains in the erect posture for an hour, after which the water remaining in the stomach is again withdrawn as completely as possible and measured. Thereupon (or at the next visit) 500 c.c. of water are again introduced and the patient is made to lie on his right side for an hour. In this position the force of gravity enables the dilated and weakened stomach to empty itself through the patent pylorus, and at the expiration of the hour the stomach will be found empty or nearly so. If this is the case, then the greater the amount of water found in the first examination, the greater the degree of gastric atony.

THE EFFECT OF VARIOUS DRUGS UPON THE CORONARY CIRCULATION.—Eppinger and Hess (*Ztschr. f. exp. Path. u. Therap.*, Vol. 5, No. 3).—The hearts of various animals were isolated, extremely dilute solutions of various drugs were made to pass through the coronary circulation, and the effect noted. It was found that adrenalin dilated the coronary vessels while contracting those of the peripheral circulation; cholin, physostigmin and pilocarpin contracted the coronaries and dilated the peripheral vessels; barium chloride, digitoxin and strophanthin contracted both; atropin and sodium nitrite dilated both; sodium iodide was without effect. These interesting observations seem to indicate that the rational medication in true angina pectoris consists in the administration of adrenalin, atropin and sodium nitrite, the first where the general blood-pressure is low, the two last where it is high.

MAGNETIC METHOD OF DETERMINING THE GREATER CURVATURE OF THE STOMACH.—Mayer (*Przegl. lekarski*, No. 2. Abstr. in *Deutsch. med. Wochenschr.*, 1909, No. 6).—In a Polish journal, one Mayer advocates a curious method for determining the position of the greater curvature of the stomach. The patient is made to swallow a small magnet, enclosed in rubber tissue and fastened to a long silk thread. The magnet, on account of its weight, lies at the lower border of the stomach where its presence can be demonstrated from the outside by means of a compass needle. Similarly in cardiospasm, or in esophageal stricture, the side of the obstruction can be determined by means of the magnetic needle.

CORRESPONDENCE.

PARIS LETTER.

By AUGUSTE A. HOUSQUAINS, M. D.

MILK AS A THERAPEUTIC MEASURE IN GASTRIC AND ENTERIC AFFECTIONS.

The vogue which milk has enjoyed as a therapeutic measure for more than half a century, particularly in the treatment of affections of the stomach and intestines, is at present undergoing a crisis which should engage our earnest attention. As only too often happens, reaction against the popularity of a remedy may be too excessive and result in so great a discredit of a remedy that its use, in certain diseases where its benefits are undeniable, will be countenanced only in the most reluctant manner. It is true that in some cases of nephritis a milk diet is not only useless but harmful. It is also true that in infantile gastro-enteritis the results following this sort of dietary are not always gratifying. Likewise, in intestinal affections in adults, the practitioner is often disappointed when he expects milk to effect a cure. But to prescribe milk in affections of the stomach as a number of doctors are doing is really carrying the matter too far. For the error of the detractors of a milk diet in the therapeutics of gastric affections is a technical one which arises from clinical errors with regard to its employment.

Contrary to a generally accepted idea, one is justified in saying that all patients are tolerant of the use of milk. In those instances where patients manifest an intolerance there are undoubted indications that it was not administered in a way to suit them. It goes without saying that milk should always be of excellent quality. Only small quantities should be administered at a time, about 300 grs., and at regular intervals. Each ingestion of milk should be followed by a careful rinsing of the mouth. If the patient is confined to his bed, a cup of milk every three hours suffices as a diet. Moreover, radioscopy has demonstrated that this interval is necessary to assure the emptying of the contents of the stomach into the intestine. Increasing doses are not necessary; on the contrary, they are harmful. Sometimes milk may be diluted and spiced. The addition of sugar augments its nutritive value. Except in cases of chronic ailments of the stomach, the milk regimen ought to be of short duration; therefore, it is well not to prolong the time beyond two weeks. A mistake is often made by ordering milk as a drink with a repast; this may cause serious inconveniences in dyspeptics on account of over-alimentation. What is important to remember, then, is to regulate the employment of milk in the therapeutics of gastric affections and to study its indications. As is known, a milk regimen may be serviceable without other aliments, but, on the other hand, adjuncts are often permissible. An exclusive milk regimen should be administered when it is thought necessary to reduce the activity of the stomach to a minimum. This should not be lost sight of in acute and chronic gastritis and in ulcerations. In alcoholics, who suffer from gastric pains, these untoward symptoms generally disappear after some ten days or a fortnight. But it should not be forgotten that an exclusive milk diet is not without its inconveniences, for the doing away with the ordinary alimentation is accompanied by a sensation of depression which may cause some worry on the patient's part. But this should not arouse any anxiety so long as the body weight remains stationary. A remarkable fact is this.

that alimentation by a strictly milk diet need not be very abundant to maintain a fixed weight, in case the patient remains in bed. But to say that this fixity can be assured only by a ration which has fuel value in calories is theoretically insufficient. The ideas we at present entertain in regard to the requirements of the organism are surely in need of revision for it cannot but be admitted that, for a certain length of time, a strictly milk ration perfectly suffices to maintain the organism even without the administering of large quantities.

Diarrhœa must be reckoned as one of the gravest complications of a milk diet. With certain patients it is a distressing complication. Its cause, up to the present time, has not been fully elucidated. Prepared chalk and mineral waters are the best means we have at hand to combat it; calcium salts having this virtue that they increase the coagulability of the milk. When the diarrhœa does not yield to this treatment, it is necessary after some delay to modify the regimen of the patient. With other patients a milk diet is accompanied by a stubborn constipation on account of an atony of the intestinal tube. Laxatives or injections of oil are then indicated.

At times milk is ineffectual in relieving pain or stopping the vomiting. A pyloric ulcer is often the cause of this defect in the treatment. In these cases skimmed milk often gives remarkable results. It does not coagulate in the stomach and it is on account of this that the emptying of the contents of the stomach into the intestine is more readily effected than when ordinary milk, which has a tendency to coagulate, is used. But in other cases it is necessary at times to administer only mineral water for a day or two. The addition of the yolks of one or two eggs, well beaten with a little sugar, constitutes a diet that is doubtless insufficient, but has this in its favor that by its use one is able to reestablish with considerable rapidity a milk diet with those patients who have been decidedly difficult to treat. Again, the addition of alkalies to the milk is an adjuvant of the first order in the treatment of pains, but it is well not to prolong their use during the time when milk is the only staple of food prescribed. As soon as it is possible to stop the strictly milk diet, recourse may be had to a diet which is diversified by other foods. Beginning with milk porridge, eggs may follow, then nutritive pâtés, rice cakes, purées of dried vegetables and potatoes, sweet biscuit, and by easy stages there is evolved a diet which is progressively more and more substantial though always devoid of irritants to the gastric mucous membrane.

These are some of the rules based upon observation and clinical experimentation, which, when followed by the practitioner, yield precise results in the treatment of gastric diseases. In spite of their empiricism, in spite of the fact that it is somewhat humiliating to the physician not to be able to explain the mode of action of a therapeutic measure, it must be admitted on all sides that milk, in the hands of those who have enough judgment to know how to administer it, is the alimentary and therapeutic remedy of the first order at our command. No other diet can replace it, and moreover to conceive of any substitute can be interpreted only as a sheer waste of time.

In another manner may be explained the campaign which is being waged against the use of milk in gastric affections, and which is not by any means terminated. The question that is agitating those opposed to the milk diet is whether it should be prescribed as a diet, pure and simple, in every case without regard to dosage, or whether the ration should be regarded in the light of a therapeutic measure to be prescribed

only when indications arise that demand a precise amount to be administered. Only good can come out of this discussion, for when the study of the clinical and therapeutic indications for a milk diet is perfected patients cannot but be benefited; and furthermore, when the clinicians will have achieved a knowledge of the rules governing the administration of the milk diet, each morbid entity will be benefited without suffering from any inconveniences:

April 10th.

THE ADVANTAGES OF PAIN.

EDITOR INTERSTATE MEDICAL JOURNAL:

To lessen human suffering, a broader knowledge of the psychology of pain—as pain—is needed. The psychology of pain, in its relation to signs of disease, to moral temperament and as an act of begetting a knowledge of the nervous states of the body, is very largely an unexplored continent. Only a few islands of scientific intelligence along the coasts of the continent of pain have been discovered.

As a universal ground of sensational knowledge (concerning the distressed condition of our common nerves of sensation) how inadequate are such definitions of "Pain," as those given in Gould's Pocket Medical Dictionary of 30,000 words, of 1907! We turn to page 492 and we read, as the generic definition of "Pain," the following: "Pain:—suffering; a distressing sensation." Then follow a few special applications of this general definition of "Pain" to distressing conditions of the joints, bones, and uterus. And, lo, the medical lexicographer's descriptions of the infinitely numerous and complex "pains" of the human body and race are proudly ended, with that imperturbable serenity common to those whose literary and scientific ability is expressed in the art of composing dictionaries.

Suppose, however, that our desire for facts is stronger than our awe or trembling at the knees because of the presence of the lexicographer! And, having gratefully accepted Gould's definition of "Pain," as "suffering; a distressing sensation," in order to make sure of our ground, we finally ask this dictionary-maker the meaning of the word "sensation." We turn to page 591 and we find "sensation" defined by exactly two words, viz.: "Corporeal feeling." But, since among the 30,000 words of this dictionary the words "feeling" and "feel" are not to be found or defined, and in order to have some intelligible explanation of what the word "feeling" (in its relation to "sensation") means, we are forced to consult our unabridged Webster. Here finally we discover that we are out of the woods, for "to feel" is, according to Webster, "to have sensation excited by contact."

Possibly no medical scientist would quarrel with this definition of "feeling" as "sensation excited by contact"; i. e., with the sensory nerves. The psychologist and the physician can both accept this definition. The Lion of Allopathy and the Lamb of Psychotherapy can both lie down together in this corner of the old lexicographer's pasture of definitions. Both the Lion and the Lamb would possibly express themselves willing to admit the following principle, namely: In order for any human being to "suffer" by "contact"—in a word, for any human being to experience

"pain," as defined by Gould: "suffering; a distressing sensation"—two conditions are necessary: first, some objective or subjective force, which is capable of awakening the "distressing sensation" when it comes into contact with the sensory nerves of the human body; secondly, a common nervous center of sensory nerves in the body to which the awakening force is related, when it excites the "suffering; distressing sensation" of pain. And, if we attempt to classify our "sensations" in their relation to the disorder or order of the sensory nerves, and strictly in their relation to the physiological knowledge such "distressing sensations" impart—as knowledge—then, it would seem, that "Pain," as "suffering," and "distressing sensation," should be psychologically studied as that special class of sensations which can alone give us any rational basis for our subjective knowledge of our sensory nerves, as the teachers of the nature of our bodily disorders.

Briefly, painful sensations are those feelings which give us our personal knowledge of our own bodily or psychiatric disorders. As comfort implies the existence of sensations of bodily order, so discomfort means the continuance of sensations of physiological disorders. Thus, to lesser human suffering, a broader knowledge of the psychology of pain—as pain—is needed.

H. G. W.

OBITER DICTA FROM FOREIGN JOURNALS.

THE CENTER OF AWAKING.

"The existence in the brain of a center charged with the function of sleep similar to the language and writing centers and the centers for the movements of the various members of the body," says Dr. Bérillon, in an interesting article entitled "*Le Centre du Réveil*," in the *Gazette des Hôpitaux* of April 6th, "has been admitted by divers authors. In an article which appeared in *La Nature*, in 1901, Dr. Cartaz stated a number of facts in substantiation of the hypothesis of a sleep center. In my opinion, after observing the phenomena which occur in the production and cessation of sleep, I am strongly inclined to believe that there is an awakening center." The fact which gives support to the supposition that there is in the brain a center of which the special function is to keep us awake, is that by the intervention of will-power we can war against the inroads of sleep and even retard its appearance. It is true that this resistance is but temporary and can be exercised only on condition that the need for mental repose is not too great. A second proof is the aptitude certain persons possess of being able to awaken themselves voluntarily during the night at an hour they have fixed upon in advance. Thus the observation has often been made of a person who, having made up his mind to arise at a certain hour, sleeps profoundly until the moment he ought to awaken, and then awakens spontaneously. The habit of awakening every morning at the same time enters into the same category of facts. This can be explained by the intervention of a certain cortical interference which has the power of awakening, similar to the agitation induced by the disturbance caused by an alarm clock. It is a fact that certain persons have the singular gift of influencing, by personal action, the function of sleep. Napoleon was gifted in this way and in the "Memorial of St. Helena" is related that he could induce sleep so soon as he felt the desire. The physiologist Muller in his "Manual of Physiology" (Vol. II., p. 549) writes that by willing it he could promptly fall asleep. But the most interesting of all facts is this that it is possible to interrupt sleep, both in man and in animals, with the greatest facility. Peripheric excitations responsible for this break are caused by the senses of sight, hearing and touch. The slightest ray of light falling on the eyes will suffice to awaken an animal in deep slumber. At the first indications of daybreak almost all birds awake. And it is not at all rare to observe that birds in cages will at once begin to sing when a room that has been dark for some time is suddenly lighted by artificial means, thus conveying to them the illusion of daylight. If birds are easily awakened by light, it can readily be understood how necessary darkness is to bring on sleep and that this is true is best illustrated when there is an eclipse.

Human beings are just as easily aroused when a light is suddenly thrown on their faces. Noises cause the same action. A noise that is far from startling, but to which persons are unaccustomed, will not only prevent sleep but awaken a sleeper out of a profound slumber. A cannon on a warship fired at sunrise awakens rudely a passenger newly embarked, but the effect produced upon him by this loud noise grows less and less from day to day, and ere long he is not incommoded at all,

while for the sailors, though accustomed to the sound, it never lacks as an efficacious means of arousing them from their deepest slumbers. It is certain that the function of sleep is greatly influenced by the sort of education which can assist in interrupting the process. Thus awakening can easily be induced if one calls the name of the sleeper. Carpenter in his remarkable article on sleep (*Cyclopedia of Anatomy and Physiology*, Vol. IV., p. 683) cites the instance of a man being at once aroused when his name was mentioned in close proximity to his ear. In a barracks the bugle-call, for the purpose of awakening the men, is more effective than the trumpet, which is sounded for other duties. These divers examples confirm the opinion that men plunged in the depths of sleep are less indifferent to psychic influences than their physiognomies would lead us to suppose. The excitations coming from contact with the periphery of the body have a less active influence. To arouse a sleeper who is deep in sleep, it is often necessary to shake him in no mistakable manner. On the other hand, the least current of air which strikes the face of one who is really in a torpid state, on account of being held in the fastnesses of sleep, is the means of awakening him almost at once. The same happy results are achieved when cold water is thrown on the sleeper's forehead or on his eyes. This action on the part of cold water is again illustrated in those persons who really are not completely awake until they have taken their cold plunge. There are other excitations which have a marked influence in the phenomenon of what is known as the awakening. Such are the visceral sensations excited by hunger and thirst, and by the desire to relieve the organism by urination, etc. These peripheral and visceral excitations interrupt the course of sleep by a mechanism identical with the interference produced by bugle-calls, the striking of a clock, trumpet-sounds or the verbal message delivered in close proximity to the sleeper. That these excitations result in the same way must convince us that they act directly on a cerebral center, the function of which is to bring about the awaking of a person and keep that person awake.

As we have said before, the nerves which transmit, surely and rapidly, the order to awake are the optic, the auditory, and the nerves of the face; therefore, one is justified in supposing *a priori* that the localization of the sense of awaking is situated in the brain near the center of vision, audition and facial expression, inasmuch as it is through these that the process is evolved. Again, this special center should be found near the center of tactile sensibility. Hence, it is within the bounds of reason to look for it at the base of the brain in the middle line. The experiments of Raphaël Dubois on marmots and hibernating animals have demonstrated that it is on account of carbonic poisoning that inhibition of the center of the function of sleep takes place. This center is found in the marmots in the anterior part of the aqueduct of Sylvius and near the base of the third ventricle. In a similar mechanical way sleep, induced by anæsthetics, is effected. This somnolent state manifests itself when the center of awaking, inhibited by the intoxication resulting from inhalation of an anæsthetic, is somewhat paralyzed, and is incapable of exercising the function which makes for keeping a person awake.

And here it would not be out of place to remark that in sleeping sickness the accumulation of trypanosome in the blood vessels at the base of the brain, constitutes a mechanical obstacle which causes interference in the function of the center of awaking. Hence, the waking state more than the sleeping state depends on the integrity of this center, for although influences such as psychic interference, toxic inhibition, organic

alteration, compression from a tumor, act on the center of awaking in such a way as to make it incapable of performing its proper functions, it is yet possible to awaken a subject but impossible to keep him awake. Our inference then ought to be that the center of awaking is a motor center presiding over an ensemble of motor activities from which results not only awaking, but the power to remain awake. A man in whom the center of awaking is altered, finds it is just as impossible to remain awake as the man who having been struck in such a manner that there is an injury of the third left frontal convolution, finds it impossible to speak. If one allies himself with those who are of opinion that there is an unvarying relation between the seat of cerebral lesions and the distribution of the paralytic phenomena which are the consequences, one ought to be inclined to the view that in the cases in which patients present, as principal symptom, a prolonged and unconquerable somnolence, the lesion must involve the center of awaking.

Now, although the facts collected on this subject by the anatomophysiologists are not any too numerous, one cannot but think that they tend to confirm this hypothesis. In a lecture on the symptom of sleep, as a concomitant of cerebral tumors, Prof. Raymond has related many facts which go far in demonstrating the possibility of a cerebral center with lesions that show, as the most decided symptom, a somnolence which cannot be resisted by the patient. In fact, such tumors as glioma and sarcoma, situated oftenest in the neighborhood of the regions that Raphaël Dubois has pointed out as the seat of carbonic auto-intoxication in marmots, provoke in the afflicted a state of somnolence in which they remain until death occurs. In this connection the case reported by Dr. Soca appears to be most convincing. The salient feature of his case was that though the patient remained for a long time in a state of somnolence, he could easily be aroused, but could not be kept awake for any length of time. The autopsy showed the existence of a sarcoma which occupied the peduncle and the base of the third ventricle.

The point upon which Dr. Bérillon dwells is that all the peripheric excitations which either induce sleep or cause its cessation are really psychic excitations informed with a most active influence. This fact had already occurred to Lasègue, and in his lecture delivered in 1881 he expresses his astonishment in the following words: "In the first place there are two kinds of sleep with decided differences—the natural and the artificial. The latter is not of so frequent occurrence that it does not astonish the physician. No function, in fact, ever appeals to the investigator as something that can be reproduced by an experiment; therefore, when we study a function, our attitude in the matter resolves itself into the thought of a chemist when he makes an analysis: synthesis must be always interdicted. But there is one exception and that is sleep, for this function can be reproduced, and by reuniting a number of conditions that an analysis has made known to us, we are able to provoke it, while on the other hand we are not able to produce either circulation or respiration, despite our almost exhaustive knowledge of the laws of circulation and respiration. That we can produce sleep, is a unique fact; but this should not be forgotten, that sleep does not necessarily imply the intervention of an external action on the special organ charged with the function of maintaining a person in a waking state. By suspending the function of this special organ—any excitation that might result in wakefulness being suppressed—the person passes necessarily into a condition of sleep.

Hypnotism as a narcotic agent is an excellent case in point, for its action can readily be explained on the ground that it inhibits the center

of awaking, the inhibition arising from a psychic influence or a physical action; and analogous processes exercised on behalf of a contrary condition cause the awakening or termination of the hypnotic state. Now although the facility with which certain subjects are hypnotized struck an observer such as the patient Lasègue with surprise, he was yet more impressed by the fact of the facility with which the awakening could be produced. In his article on Braidism in the *Revue des Deux Mondes* in 1881, the publication of which at the time created quite a sensation, he eloquently expatiates on this fact. The importance which he attached to the matter can best be expressed by using his own words, for what he said really constitutes the dominating thought of the science of hypnotism. "When a patient is dominated by hypnotism, his sense of sight in abeyance, his eyes convulsed, his senses inert, his limbs rigid," writes Lasègue, "how are we going to avoid the depression which, before long becomes, alarming, if we do not foresee some way out of the dilemma? And to whom are we indebted but to Braid for an ingenious discovery to overthrow these strange combinations? We try in vain to arouse the patient by energetic means, such as loud noises and sensations productive of pain, but his condition being apparently lifeless he fails to respond to familiar excitations since the functions thereby stimulated are to all intents and purposes destroyed. But the simple procedure of a breath of air on his eyes breaks the charm, and forthwith he opens them; and without passing through a transitory state, changes from deep lethargy into complete wakefulness. This sort of *Lebens-Erreger* is unique, painless and dependable. I recall that one day one of my students, who had written an excellent thesis on hypnotism, put a patient to sleep and forgot to awaken her. This happened on visiting day at the hospital. When the parents arrived and found their daughter mute and immobile, they attempted to arouse her; and though their excitement waxed intense when they saw that their efforts were fruitless, and loud enough language was used to recall any one under normal circumstances to consciousness, the results were *nil*. The superintendent of the hospital was sent for and showed at once that he was at a loss as to how to relieve the situation. Thereupon he sent word to the student, who solved the problem instantaneously. Now, although the lethargy had lasted some four hours, the awakening was accomplished with the greatest ease. Thus we have at our command a method that is absolute. To cut short so complicated a state as the hypnotic by means that are simplicity itself, is indeed a revelation! Whether the air is blown on to the eyes of the patient by the mouth, or wafted by a fan, the effect is always the same."

The simple procedure involved in awaking a hypnotized person by air blown on the face, is also just as effective in ridding a sleeper of natural sleep, no matter how profound it be. The explanation is that a peripheric excitation is directly transmitted by the nerve endings to a cerebral center, the return of whose activity is marked by the recurrence of an awakening. The disposition to be hypnotized and at once to come out from the hypnotic state under determined peripheric excitations, evidently results from hereditary aptitudes. The exigencies called forth by life and education have progressively developed in man an evolution in the center of awaking that is being, functionally speaking, more and more perfected. The experiments in hypnotism are the most decisive demonstration of the mechanical perfection which this center is acquiring, since what suffices to lessen, activate, suspend, or arouse its mechanism is derived from certain peripheric excitations of the psychic or physical sort.

BOOK REVIEWS.

CLINICAL DIAGRAMS, DESIGNED FOR THE GRAPHIC REPRESENTATION OF CLINICAL PHENOMENA FOR PRESERVATION, WITH THE NOTES OF CASES. By James C. Wilson, M. D. J. B. Lippincott Co., Philadelphia. Price 50 cents net for 25 sets.

These diagrams are pictures of the front, rear and side view of the male and female head and trunk, with the position of the bony landmarks indicated in outline. The various physical findings may be indicated upon them schematically, and the drawing attached by means of mucilage or otherwise to the case record.

BACTERIAL FOOD POISONING. A Concise Exposition of the Etiology, Bacteriology, Pathology, Symptomatology, Prophylaxis and Treatment of So-Called Ptomaine Poisoning. By Prof. Dr. A. Dieudonné, Munich. Authorized Translation, edited, with additions, by Dr. Charles Frederick Bolduan, Bacteriologist, Research Laboratory, Department of Health, City of New York. 8vo, 128 pages. Cloth. Prepaid, \$1.00 net. E. B. Treat & Co., 241-243 West 23d Street, New York.

Prof. Dieudonné's manual on "Bacterial Food Poisoning," published last year, is known as one of the best presentations of the subject. Poisoning due to diseased or decayed meat, fish, cheese, ice cream, potato, canned goods and the like, are taken up in turn. Their etiology, bacteriology, clinical features, diagnosis, prophylaxis and treatment are discussed. It will be found a valuable compend for ready reference.

ROTUNDA PRACTICAL MIDWIFERY. By E. Hastings Tweedy, Master of the Rotunda Hospital, and G. T. Wrench, late Assistant Master. London. Oxford University Press. 1908.

ROTUNDA MIDWIFERY FOR NURSES AND MIDWIVES. By G. T. Wrench. Oxford University Press.

The first mentioned book is, in our opinion, one of the best discussions, if not actually the best discussion, in the English language of the practical aspects of obstetrics. A book of this sort will, for obvious reasons, prove of incalculable value to the student. But the reading of these short, precise sentences, pregnant with useful and valuable advice, will also afford much pleasure to the practitioner who wishes to refresh his memory, or to acquaint himself with the most appropriate methods of dealing with normal and complicated labor.

Equally fortunate seems Wrench in the manner in which he presents his subject in the second volume mentioned above. The book is excellently adapted for use as a text-book for nurses and midwives.

SELF-HELP FOR NERVOUS WOMEN. By John K. Mitchell, M. D., Fellow of the College of Physicians and Surgeons of Philadelphia, etc. Published by J. B. Lippincott Co. 1909. Price \$1.00.

This interesting little volume is intended not only for those who have to deal with nervous women, but for the patients themselves. It is not technical, but is written in the plainest and briefest manner, and contains earnest and convincing talks about food and rest, air and exercise, self-control, discipline, the training of the nervous system, and how to form and confirm good habits of thoughts and action.

It is an excellent book to be placed in the hands of intelligent women who are either nervous or apprehend nervousness.

HANDBUCH DER GEBURTSHILFE. Herausgegeben von F. von Winckel in Muenchen. Dritter Band, dritter Theil. Wiesbaden, Verlag von J. F. Bergmann.

This volume contains the final chapter of Winckel's history of gynecology, an exhaustive study of the pathology of the fetus, and ends with one of the most valuable essays contained in the entire work,—medico-legal obstetrics;

almost 400 pages, written by Stumpf, of Munich, are devoted to a thorough discussion of all the various relations of obstetrics to legal medicine.

This volume, representing the third part of the third volume, completes Winckel's Handbuch, a most remarkable work, which presents every detail of our present knowledge of obstetrics.

THE RECTUM. ITS DISEASES AND DEVELOPMENTAL DEFECTS. By Sir Charles B. Ball, Regius Professor of Surgery in the University of Dublin, etc. Oxford University Press. 1908. Price, \$10.50.

This thorough and excellent presentation of rectal diseases is based upon a course of Lane Lectures on Diseases of the Rectum, delivered by the author at San Francisco in 1902; and the Erasmus Wilson Lectures on Adenoma and Adeno-Carcinoma of the Rectum, delivered at the Royal College of Surgeons, England, in 1903.

The author's clear and attractive style and the unusual excellence of the illustrations, make this book one of the most notable volumes of the Oxford Medical Publications.

A SYSTEM OF DIET AND DIETETICS. Edited by G. A. Sutherland, M. D., F. R. C. P. Oxford Medical Publications. London. Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E. C. 1908.

Until our knowledge of physiology is more perfect than at present, the scientific basis of dietetics must be an unstable one. Nevertheless, more or less empirically, experience has shown the value of dietetic methods in disease. In this volume, the leaders of the English medical profession have, in successive chapters, set down their views and the results of their experience. After a delightful introductory chapter by Sir Lauder Brunton and an entertaining one by Campbell on the evolution of man's diet, the dietetics of the various diseases are discussed in successive chapters, each by a different clinician. It is inevitable that there will be some overlapping and that the various authors will not always be found in entire agreement, but nevertheless the book is of importance as representing the best English practice. It will be found invaluable as a book of reference.

THE HERTER LECTURES (New York, 1908) ON THE FLUIDS OF THE BODY. By Ernest H. Starling, M. D., F. R. C. P., F. R. S. Chicago: W. T. Keener & Co., 90 Wabash Ave. 1909. Price \$2.00 net.

These lectures by the professor of physiology in University College, London, were delivered last year at the Bellevue Hospital and Medical School, under the foundation of Dr. C. A. Herter. They consist primarily of a clear and complete account of the physiology of the lymph, its production, the problems of osmosis and molecular tension, the absorption and out-put of the interstitial fluids and of the fluid balance of the body. An additional lecture is devoted to the consideration of the clinical bearing of these matters, mainly relating to the problems connected with the production of dropsy. The volume forms a valuable contribution to the new science of pathologic physiology which is taking its place by the side of its elder sister, pathologic anatomy.

HANDBUCH DER GYNAEKOLOGIE. Herausgegeben von J. Veit in Halle. Zweite voellig umgearbeitete Auflage. Dritter Band, erste und zweite Haelfte. Wiesbaden. Verlag von J. F. Bergmann. 1908.

To fully realize and appreciate the progress made in gynecology within the last decade, one only needs to compare this new second edition of Veit's Handbuch with the first one, published just ten years ago.

The first part of the third volume, just out, contains four essays devoted respectively to menstruation, diseases of the vagina, hematocoele, and sarcoma of the uterus. The second part, in itself a volume of 400 pages, deals solely with uterine cancer and chorionepithelioma. Winter describes the anatomy; Koblanck the etiology, symptomatology, diagnosis and radical operation of carcinoma of the uterus; Fromme details the various palliative methods of treatment of inoperable cancer and favorably mentions the acetone treatment described by Gellhorn, of St. Louis. Sarwey closes with an article on carcinoma in its relation to pregnancy. The paper on chorionepithelioma is by Veit, the editor of this splendid work.

GNORRHEA IN WOMEN. By Palmer Findley, M. D., Professor of Gynecology in the College of Medicine of the University of Nebraska, Omaha, etc. C. V. Mosby Medic. Book and Publ. Co., St. Louis. 1908.

The continued work of a large number of investigators has finally led to an appropriate appreciation of the importance of gonorrhea as an etiologic factor in the causation of various pathologic conditions that confront the physician. A thorough acquaintance with the literature on gonorrhea has become an indispensable requirement for the practitioner. The literature is enormous and published in all languages. The profession, therefore, will be grateful to the author of this volume who has studied carefully this literature and has attempted to present the views of the best workers in the field, on every question relating to the intricate problem of gonorrhea in women.

We regret to state that the pleasure of reading this book is somewhat marred by the continuous but not systematic change in type, by numerous typographical errors and the misspelling of many names of well-known authors.

CONSTIPATION AND INTESTINAL OBSTRUCTION (Obstipation). By Samuel Goodwin Gant, M. D., LL.D. Illustrated. Price, cloth, \$6.00 net. W. B. Saunders Company, Philadelphia and London. 1909.

The writer has prepared a thoroughly practical work on the non-medicinal and surgical methods of treating constipation. After a review of the anatomy and physiology of the intestine, he takes up in turn the various causes of constipation and obstipation. The bulk of the volume is devoted to treatment. Chapters are devoted to diet, gymnastics, hydrotherapy, massage and the like, and the final third of the volume to operative procedures. While devoting a chapter to medicinal treatment, the author emphasizes the fact that in the great majority of cases of constipation, the use of drugs is a mistake. Successful treatment depends upon accurate diagnosis, and constipation due to neurosis or to faulty habits can be cured only by proper psychic and hygienic methods. Finally the book should be of great value to the general practitioner in calling his attention to the fact that, far more frequently than he is apt to suppose, surgical interference alone can produce a permanent cure of constipation, since the mechanical reasons for sluggish evacuations are by no means rare.

MEDICAL INSPECTION OF SCHOOLS. By Luther Halsey Gulick, M. D., and Leonard P. Ayres. Russell Sage Foundation. Charities Publication Committee, 105 East 22d Street, New York. 1908. Price \$1.00, postpaid in the United States.

There seems to be a general impression in America that medical inspection of school children is still experimental and on trial, and that we are leaders in this work. The reverse of both these impressions is true. Brussels has had inspection since 1874, and Paris since 1884. The work is systematically carried on in France, England, Germany, Belgium, Switzerland, Bulgaria, Japan and in the Argentine Republic. Our country is among the last to take up the work extensively. The movement has two distinct aspects. The one is directed toward the direct benefit of the children and schools examined; the other has for its object the accumulation of statistical information regarding the prevalence, nature and degree of physical and mental defects of school children in order to form a broad, scientific basis of knowledge whereby medical inspection and education itself may be made more efficient. The volume under consideration is one of the by-products of the "Backward Children Investigation," a research supported by the Russell Sage Foundation for the purpose of studying so-called "retardation" among school children. It will be found a mine of information on the subject and is indispensable to all workers in this field. One of the most interesting results obtained by the authors is a body of statistical evidence that seems to disprove the notion generally held that physical defects as such have a distinct part in causing mental retardation among school children. One defect that this work shares with practically all other researches on the subject is that it is limited to city children. There is great need of similar work among suburban and country school children.

DIE HYGIENE DES OHRES. Von Dr. Paul Maas. Wuerzburger Abhandlungen aus dem Gesamtgebiet der praktischen Medizin. Curt Kabitzsch (A. Stuber's Verlag), Wuerzburg. 1909. Price, paper, M. 0.85.

In this monograph the reader will find clearly and concisely stated the leading points in the prophylaxis and treatment of aural disorders.

INFANTS' MILK DEPOTS AND THEIR RELATION TO INFANT MORTALITY. The New York Milk Committee of the New York Association for Improving the Condition of the Poor.

The work of the New York Milk Committee described in this book is directly in line with similar work done by our own Pure Milk Commission. The New York Committee maintains seven infants' milk depots with trained nurses in charge, and with a corps of twenty-nine physicians of all nationalities conducting classes for tenement mothers after the model of the French *Consultations de Nourrissons*. Statistical tables, maps, diagrams, facsimiles of record charts in use by the committee, and photographs illustrating all phases of the work, are printed, and the booklet is a mine of information concerning the organization, cost and maintenance of infants' milk depots.

ATEMKUREN MIT 115 REZEPTEN. Von Dr. med. Henry Hughes. Wuerzburg, Curt Kabitzzsch (A. Stuber's Verlag), 1909.

This monograph treats, with true German exhaustiveness, all phases of respiratory therapeutics. Accurate instruction is given in prescription form for the utilization of respiratory gymnastics in the various respiratory, circulatory, nervous and constitutional diseases, and if the writer sometimes shows a tendency to exaggerate the importance of this branch of physical therapeutics, we can readily forgive him in view of the solid contributions he has made to our knowledge of an unduly neglected method.

DIE ERWEITERTE VAGINALE TOTALEXSTIRPATION DES UTERUS BEI KOLLUMKARZINOM. Von Dr. Friedrich Schauta, Professor der Geburtshilfe und Gynaekologie an der Wiener Universitaet, etc. Verlag von Josef Safar in Wien. 1908. Preis: Mk. 6.00.

While to-day the majority of operators seem to favor the abdominal methods in operations for cervical cancer, the vaginal methods still have their defenders. Foremost among these stands Schauta, the well-known exponent of the vaginal route in gynecologic operations. In this volume he gives a detailed description of his operations, well illustrated in five colored plates, describes the exact findings, both macroscopic and microscopic, in more than 250 cases, and records exactly the immediate and late results of these operations. A careful study of this excellent monograph leaves little doubt that the vaginal method as executed by Schauta is well able to compete with the very best results obtained with the abdominal operation.

LEHRBUCH DER ARZNEIMITTELEHRE UND ARZNEIVERORDNUNGSLEHRE UNTER BESONDERER BERUECKSICHTIGUNG DER DEUTSCHEN UND OESTERREICHISCHEN PHARMAKOPOE. Von Dr. H. P. Tappeiner, Ord. Professor des Pharmakalogischen Instituts der Universitaet Muenchen Siebente, neu bearbeitete Auflage. Leipzig. Verlag Von F. C. W. Vogel. 1908. Price, 8 Mkt.

This is a text-book of therapy based upon the German and Austrian pharmacopeia. The arrangement of the subject matter is quite different from most of the text-books of native authors. Drugs, serums and other means of therapy are classified according to their therapeutic action and not upon their physical or chemical characters. Quite an extensive symptomatic therapy, based, however, upon the most rational indications, is expounded in this volume. The indications set forth are robbed of all theoretical and empirical influences and only the most absolute and accepted actions and effects are included. This makes the volume exact, dependable and free from all the questionable therapy which has been added to so many text-books on this subject merely for the sake of completeness. It can be heartily recommended to the profession of this country.

GYNAEKOLOGIE UND GEBURTSHILFE IN IHREN BEZIEHUNGEN ZUR OPHTHALMOLOGIE. Von Dr. Ernst Runge. Universitaets-Frauen-Klinik in Berlin. Verlag von Johann Ambrosius Barth in Leipzig. 1908. Preis: Mk. 4.25.

Both the normal and pathologic functions of the female sexual apparatus stand in close relation to the functions of other organs of the body. Their relations to the nervous system or the gastrointestinal tract have been extensively studied and to-day are well understood. Runge has collected in this volume all the facts known concerning a mutual influence of both the genital apparatus and the eyes upon each other. These relations certainly have not heretofore aroused that amount of interest on the part of the profession which they seem to deserve. Not less than 784 contributions bearing on this subject

have been found by the author who gives a clear and complete digest of this immense material. The volume will prove of special interest to the gynecologist and ophthalmologist, but contains enough information of practical value to the general practitioner to repay a careful perusal.

JAHREBUCH UEBER DIE LEISTUNGEN UND FORTSCHRITTE AUF DEM GEBIETE DER PHYSIKALISCHEN MEDIZIN. Begrundet und herausgegeben von Prof. Dr. Ernst Sommer, Direktor der Universitaets-Poliklinik fuer physikalische Therapie in Zuerich, unter Mitarbeit zahlreicher Autoren auf dem Gebiete der physikalischen Medizin. Mit 8 Illustrationen im Text und Abbildungen auf II Tafeln. I. Jahrgang. Leipzig. Mk. 10.

The remarkable advances made in the treatment of diseases by physical means are incorporated in this exhaustive treatise in a very satisfactory manner. The scientific explanation and indications for each individual kind of treatment are considered at length and probably this part of the volume is the most commendable because it lifts this form of treatment from the more or less empirical basis upon which it is usually administered. Balneotherapy, electrotherapy, fangothrapy, heliotherapy, hydrotherapy, phototherapy, physical therapy, radiumtherapy, röntgentherapy, effect of fluorescent bodies, lighttherapy, are discussed in detail with their peculiar effects and results illustrated by case reports. The subject as presented in this volume should certainly awaken new interest and more study along these lines, especially in diseases which do not react favorably to other forms of medication.

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EDITORIAL.

ON THE ADVANTAGES OF SELF-CONTROL.

The historians of our mental habits, guided somewhat by the unphilosophic sense that makes much of what is far from normal, are prone in their works to dwell at too great length upon what they conceive as of paramount interest to the public. Their expositions of mental states are at one with other unrestrained writings, and though much may be said in praise on the grounds of patient endeavor, persevering observation, and analytic research, the lessons culled by the reader are not imbued with the thought which should be deepest in his mind. This thought is a very important matter, for out of it may arise a point of view quite new and one that has the power to readjust conditions to such an extent that the possibilities of the normal mental state, as a working factor in our modern life, will be duly appreciated. And to further this thought is not only a commendable act, but a very necessary one, since by its dissemination a balance may be struck between the normal and the abnormal.

That this may be accomplished without much laboriousness on the writer's part, and also without a grasp of plan that is inclusive of all the universals, has not been instanced so many times before that a new reading, conceived in the calm of an enviable moderation, should receive but passing notice. Just what an unobtrusive message of sterling worth may stand for as a stimulus to ideas which are dominant in the making of mental dignity, is well instanced in Dr. Paul Dubois's book, "*L'Education de Soi-Même*," recently translated into English*; for in eloquent but restrained language is put forth the sort of philosophy that ought to make a decided appeal to all those medical men who have thoroughly emancipated themselves from the shackles of a past which made light of the insistent truths of preventive medicine. In reality, born of self-

* *Self-control and How to Secure It.* By Dr. Paul Dubois, Professor of Neuro-pathology in the University of Berne. Funk & Wagnalls Co., New York and London. 1909.

control is the issuance of the conception of the fitness and value of certain views of the philosophy of life, that at present are of paramount importance in the unmistakable warfare which all doctors are waging against the presence of morbid manifestations that arise through a fancied inability, on the part of thousands of people, to obey the sane laws which always act as protective measures against exuberances and extravagances eventuating in what is properly called disease.

If any age really needs the ballast that is the happy outcome of self-control, it is surely the age we live in; and if any special branch of the human family, more than any other, needs the beneficent offices which are supposed to flow therefrom, it is that large section which has lost the strength of its will-power by virtue of its egoistic estimate of the importance of minor ailments. No greater proof of this can be found than in the prosperity of the many spiritual healing societies, that garner their lucrative harvest from all those who have allowed their imaginary defects of a nervous sort, to magnify themselves into incubi that sit astride them, despite the counsel of their physicians, and which are only raised by the intercession of the novelty of a religious frenzy. These mental disturbances, of which the various healing societies glibly speak as diseases of sufficient gravity to baffle all the ramifications of science and, by reason of this, are grist to their ever-grinding mills, would not attract the attention they do to-day were some sort of intellectual thumb-screw fastened on vagaries, the abetting of whose import means an ever-increasing supply of material for all the bastard sciences outside medicine.

But self-control has other applicabilities, and to mention only one that concerns us most, it should convey to the consciousness of all normally sensitive members of the medical profession, its advantages as an asset in the many trying situations which somehow fall oftener to the lot of doctors than to that of other men. The plea often advanced, that doctors are a class apart from other men, in so far as their very science and its application in the sick-room and hospitals prevents their conduct from assuming the privileges of other normal men, has cast the wrong halo around a profession that to-day needs none of the retrograde medievalism, which until quite recently was, in part, gratuitously bestowed upon it by a public ever-enamored of mysterious phenomena and, in part, by those antiquated leading lights in the profession itself, who made considerable capital out of an aloofness that was not the result of intellectuality, but was sedulously fostered to prevent any ordinary person from peeping into so sacrosanct a science, lest such familiarity would deprive the science of its almost supernal dignity. But with the advent and promulgation of preventive medicine, the science was fortunately divested of all its cumbersome wrappings, and the light that thenceforth played upon it was the

beneficent light that clears away obscurities. Now, not only has medicine itself, on account of this welcome uprooting from the choking tares of a foolishly-limited state, been decidedly benefited, but the average doctor has been brought into juxtaposition with the many social problems that must go far in making him desirous of being something more than the enviable master of the art of the composite pill. And by virtue of his new social function, his temper, not always of the best, will be assaulted in no mistakable manner, for the irrepressible inquisitiveness of certain constituents of the general public will display in his presence an insatiability for medical knowledge that may undo his not too nicely adjusted equanimity. And here self-control will be most effective, for by its assumption his dignity will be sustained and his powers for doing good extended. But any lapse from mental serenity will surely be counted against him, and be classed with the rather despicable qualities of weakness and faultiness; and the harm done will be much more than personal, since the consensus of opinion will have it that the medical temper is so unmodern in its inadaptability to the conditions which at present obtain, that to speak of an alliance between medical thought and the thought outside the hierarchy of this special science, is as far removed to-day as when the thongs of medievalism bound it down until its inertness was its real badge of infamy:

THE VAGRANCY EVIL.

Some of the Eastern States are now taking the first steps in the direction of a scientific treatment of idlers and vagabonds, although we are fully a quarter century behind certain European nations in this matter. It is rather remarkable that the medical profession has taken so little interest in these defectives, and permitted the growth of a popular opinion that they are subjects for discipline and not medical treatment. Perhaps it is not too late to put our house in order and prevent an accusation of neglect of duty.

The pathologic basis of vagrancy seems to have been entirely overlooked in the recent discussions, although the facts have been known for many years and repeatedly published. This part of the army of unemployed is not at work because they can't work. Healthy men do not submit to such terrible privations and sufferings, nor do the vicious. Tramps are sick men, some so inefficient that all labor is impossible, but the vast majority are able to work intermittently for short periods when they become exhausted again. It is a diseased condition which resembles the normal state of savages, and though investigators have

generally used the blanket term "neurasthenia," there is ample evidence that the sufferers are not all neurasthenic and should be differentiated into other classes with a view of curing them. It is a medical question which must be solved by the medical profession very soon, for the evil consequences of neglect are now appalling. Vagrants are causing losses of millions of dollars, by railroad accidents, and an enormous amount of crime has been laid to them, for it is a mere step from vagrancy to crime.

The causes of the vagrant's condition are as numerous as the strains of civilization,—strains which drive them to primitive methods of existence or parasitism. Of course there is usually a congenital neurotic basis, derived from parents who should not have had offspring, and the condition has also been exaggerated by underfeeding and bad living in childhood, but the determining causes have been the constant nagging strains which they did not know how to avoid. Unfitness to the climate is one of them, for there is a disconcertingly large number of native born hoboos,—some of very old families, too. The foreign born citizen is generally a steady worker. Another recently discovered fact is the large number whose early calling required prolonged near work of the eyes, and from what we know of the nervous wreckage from eye-strain, it is reasonable to assume refractive errors whose correction would have prevented the collapse. Type-setters were formerly noted for their inability to keep at work, and a large number became intermittent tramps. The eye-strain in this calling is pre-eminently severe. Some vagrants began as truants who could not stand the eye-strain of the school-room. Indeed in the susceptible, everything which constantly strains the nervous system, is a cause of that restlessness which prohibits steady labor. It has been said that the prostitute is the female counterpart of the criminal, but she is just as apt to be like the hobo—unfit to labor for a living.

The sole cure for the vagrants is confinement as a patient in an institution, where physicians will treat his evident physical disabilities, and prescribe only such labor as will build up the nervous system and not exhaust it—appropriate nourishment being the main reliance as a matter of course. When a case recovers he should be released but kept in view for a possible relapse, the incurable being permanently deprived of liberty. Where tried in Europe this plan is completely successful and moreover the institutions are almost if not entirely self-supporting, through their farms and factories. The institutions are neither "work-houses" nor "poor-farms" for paupers, but hospitals for the sick, to prevent pauperism. American communities are afraid to try it because of the initial expense, and each tries to drive hoboos to neighboring towns,

by making local conditions too severe for endurance. Perhaps it would be best to have the States bear the expense, but it would be a saving in the long run. The railroads could afford to contribute or be taxed \$25,000,000 annually to establish and maintain these hospitals as that is their annual loss due to tramps. The prevention of crime would warrant an equal amount in taxes for it is an increasing menace to society.

Present methods of treating vagrants only increase their disease. Hard labor of course exhausts them, and is as criminal as it would be to put into a treadmill a nervous woman requiring Mitchell's rest cure. It is foolish to expect them to labor without the nerve force—making bricks without straw. Yet labor is the only suggestion ever made, and is soberly tried as a deterrent—making him work so hard for the State that he would rather work less for himself. It always fails, of course, and he moves on to a more tolerant community. Though they need the best kind of nourishment, one judge recently tried to "cure" them by a bread and water diet for 30 days. Indiscriminate charity makes them worse, and the "bread-lines" should be prohibited, and these hungry idlers sent to the hospital for vagrants—the asylum for those unfit for civilization where they can at least help to support themselves. It might be considered utopian to expect a time when there are no beggars or tramps, but that ideal is already attained by these modern medical methods in parts of Europe even more crowded than we are. The time is surely coming when every man who can not produce evidence that he is self supporting will go to the institution for vagrants. Beggars should disappear for they are generally the worst kinds of frauds, and beggary itself should be sufficient warrant to confine the culprit.

PRACTICE AND PREACHING.

Every little while some lay journal publishes a reproving lecture to the whole medical profession on the alleged inconsistency of not practicing the advice given to patients, and the old, old story is retold as to no physician ever taking his own medicine. As a matter of fact, unnecessary drugging is one of the ever present dangers against which physicians must guard themselves. When one is surrounded by medicines it requires considerable self control to abstain from taking some to relieve a symptom which will disappear of itself, and as a class it is quite likely that doctors do take medicines more often than they should, even those therapeutic nihilists who are able to hold their practice while telling many of their patients how to cure themselves by removing the causes of their diseases and refusing to prescribe drugs. Some years

ago it was announced that a higher percentage of physicians became addicted to morphine than in any other calling—and if true the reason is self evident.

The last complaint is to the effect that few physicians sleep with the bed-room windows wide open as though they were afraid of doing what all laymen are told is essential for health. One ingenious reporter has even gone to the trouble of making night visits to the homes of physicians and was considerably shocked to find that in every case the windows were tightly closed, and not even a crack left for ventilation. He was unable to realize that there might be method in such madness, but he would learn soon enough not to sleep in a cold room, if several times every bitter night he had to answer a telephone, and had no protection except his toga flapping in the breeze. And then if he had to dress once or twice every night to answer a hurry call, he would find that though doctors may advise a patient to sleep in a cold room, they do not countenance the dangers of dressing in one. In other words the pleasure and benefit of sleeping in cold air is one of the many things the general practitioner must forego, because of dangers which do not exist in the case of patients who can stay in bed all night and dress leisurely in a warmed room in the morning. It is merely one of the many hardships of the life.

People will persist in calling a physician at his meal time, so that he eats irregularly, often in haste and rushes out on a hurry call when he should be at rest. A whole night in bed is a luxury which many a physician does not get for weeks at a time. After visiting those patients who must be kept in warm rooms, he becomes covered with perspiration and must brave inclemencies of the weather to make his next call, whether he takes cold or not. His life is unhygienic from end to end, and he cannot help it. The only wonder is that he lives as long as he does, and that he has the bravery to keep on when he knows he is shortening his own life. Sick folks rarely if ever understand the inroads they make upon the physician's vitality. Then the worries! They alone are enough to account for the neurasthenias which are said to afflict us unduly. This can be prevented but the physician does not take his own advice simply because he cannot and continue to practice his profession.

The reluctance to undergo an operation is quite natural. We instinctively remember all the few dangers and failures and are apt to forget the hundreds and thousands who have been cured. We remember the one who has died under an anesthetic and forget the tens of thousands who lived. Consequently as years go on, the dangers loom up bigger and bigger and it is no wonder that we hesitate to subject ourselves to that which we have so often used to save the lives of others.

There is no doubt that many a physician shortens his life by postponing necessary operations. Perhaps this is inevitable and must be accepted as another of the risks of the calling in the same way that the locomotive engineer accepts the risks of tabes, neurasthenia and trauma. That is, they are occupation diseases. If we avoided the risks of contracting contagious diseases none of us could practice a day. There are also frequent references to the physician's use of alcohol and tobacco in amounts which are considered harmful. Of course there are many who conscientiously abstain from both and preach their harmfulness, but until it is proved just what is excess and until it is also proved that in less amounts there is no benefit, the profession at large cannot be accused of inconsistency if it smokes and drinks like a gentleman. Perhaps indeed we have been too prone to cut off an elderly patient's pipe and toddy when it is not necessary to abstain and few of us realize how hard it is to stop the habits of a life time. If we did allow them more often, we might not be accused of inconsistency when we use them ourselves.

THE RED CROSS SOCIETIES.

All nations are beginning to realize that a well organized efficient Red Cross society is an essential of civilization, not only in war but in peace as well. In times of local disasters, the community is helpless as the machinery of local government is temporarily wrecked, and there must be a movable machine which can be hurried to the spot to render "first aid" while the authorities are reorganizing. It is a species of life and property insurance without which there are enormous preventable losses. There also is a large element of charity to be sure, but it is far more than that, for it is a necessary part of the great law of "mutual aid" upon which modern society is wholly dependent. Survival is far more certain, if men give aid in a manner which may eventually aid themselves. The nation as a whole also suffers when any of its parts meets with a loss, and it is merely national self-preservation to organize relief machinery which can be utilized by any part afflicted.

When war occurs it is unexpected by the mass of people, so that timely preparations are never made. Indeed the costs of being always ready for war are so great as to be prohibitive, and no democratic nation will permit its government to go to that expense. The machinery of war is then always insufficient at first, time being required for organization, and it is during this period that it is necessary for the people to do voluntarily certain things which their governmental machinery is not expected or designed to do. It is here that the local Red Cross

societies step to the front and accomplish with local resources the things out of reach of the central authority. These well-known facts have quite naturally led to a complete reorganization of our National Red Cross in close touch, indeed interwoven, with the Federal Government whose officials are represented in the guiding and controlling center. Its first work was the organization of State branches whose main end at present should be the organization of local city, and county sub-branches for the collection of funds and materials when the occasions arise. Independence is wholly out of question, for the central body alone can tell each sub-branch, what is needed. Otherwise there is the inevitable suffering from the omission of essentials and there is also dreadful waste from the duplication of supplies. Indeed charity unorganized always oversteps itself, by its very profusion of riches, as it wastes resources needed elsewhere and tempts the less moral elements to pilfer. Vast unneeded sums of money are subscribed and wasted but the surplus could be returned to donors, if sent to the central treasury. Organization means economy as well as efficiency.

In war time, of course, the army medical authorities are the only ones who will know what is needed and where. At present this branch of the service is insufficient even for times of peace for the present small army, but the plans for its future increase contemplate the full utilization of the resources of the Red Cross the members of which are thus really volunteering in peace for the necessary work of war. In no other way is it possible to uphold the Army Medical Department, and prevent the scandals of the past. Unhappily, the ordinary citizen never fully realizes his public duties. We are all too prone to look after our own affairs and let others look after themselves, never thinking that in times of disasters we are doomed beforehand if every one acts this way. Self preservation demands that we perform voluntary public duties in a way which makes it possible for others to help us. We therefore bespeak a careful consideration of the needs of a very extensive Red Cross organization, for which everyone should do his share. All who can afford any time at all should become active members to organize the efforts of others. There are already thirty odd State branches and should be more, so that every part of the country will be in touch with the central body, to give and receive. An enormous amount of work can be done in time of peace, in the way of teaching how to help those made helpless by sudden disaster—and this work alone extends all the way from medical aid lectures to instruction in the management of property and money. It is a work which receives our hearty approval not only because it is charity but because it helps national prosperity and even preservation.

LITERARY NOTES.

DR. CHOUQUET, assistant surgeon in the French colonial troops, contributes to a recent number of the *Annales de Médecine coloniale* a highly interesting article on the curious practices attaching to popular medicine in Gaudaloupe. For instance, for earache, irrespective of the causation of the disturbance, some drops of ordinary oil, into which an earthworm has been thrown and which has been brought to the boiling point, are dropped into the external auditory canal. This remedy is considered sovereign. The dung of the rat converted into a watery infusion, filtered and then sweetened with honey and flavored with rum, is an incomparable remedy in all cases of uterine colic during menstruation. Just as the Egyptians regarded the cat with a degree of veneration unknown in other countries, the Gaudaloupeans almost deify the rat. And that the rat problem, showing the channels of communication between the rat and man in the propagation of trichinosis and plague, has not yet convulsed the unscientific temper of the natives, the following anecdote illustrates: "In case anyone is so indiscreet as to walk barefooted across a hard wood floor, the grave complications both of mind and body which so foolish a performance surely invite, can be obviated only by eating that very same night a number of pieces of rat meat." Now the natural æstheticism of the people is so well developed that though the eating of rat meat is obligatory in circumstances which might incur the vengeance of the evil spirit, it is not regarded with any show of abhorrence in happier conditions, since even the presence of a goodly amount of this choice viand in a fricassee of chicken or lamb, does not arouse righteous anger, but is devoured with a gusto that must arise from an unusual appreciation of the supernal qualities this advanced civilization attributes to the brown rat (*Mus norvegicus*) or the less savage black rat (*Mus rattus*).

IN his new book "The Neuroses," Dr. Pierre Janet, professor of psychology at the Collège de France, has added a volume to his numerous publications, which should be of special interest to all neurologists. As is known throughout the medical world, Dr. Janet has made this subject his own by the indisputable rights of twenty years of unremitting investigation, and an output of many brochures which surely must attest to his deep and varied interest in the shaping of a general synthesis of these affections. The third chapter, entitled "The hysterical mental state," should come in for the closest attention on the part of the reader. The author begins by describing the fundamental character of those hysterical phenomena which are known to every doctor; then deduces their psychologic laws, and finally states his "medical" method in arriving at the various definitions of hysteria. In Brachet's volume, published in

1847, fifteen varieties were mentioned, but this number is now increased to twenty; and though much might be said against so large a number, the good point in its favor is that the neurologist is free to make his choice. With all the wealth of his usual logic, the author shows how incomplete and unsatisfactory are the definitions based on anatomy, physiology and clinical observations. Again, in the hysteria which is said to be produced by suggestion, this factor is a matter of minor importance, since the development of this sort of hysteria results from an emotional disturbance following laws which can be readily studied. To consider this matter otherwise is, according to Dr. Janet, an attempt to muddle it by the introduction of a puerile psychology.

IN his learned treatise on the consequences of the ablation of the ovaries (*Les Conséquences de l'ablation des ovaires chez la femme*. Thèse de Lyon) M. P. Ferry gives an historical account of castration in the male and female. The ablation of the male and female sexual glands was practiced in the dawn of antiquity, and according to D'Ollican (*Traité des eunuques de 1707*) the earliest interferences took place 2,000 years before the Christian era. The first woman to have her ovaries removed was Semiramis, queen of Assyria, and wife of Ninus (XIIIth century B. C.). Profane history and the Holy Scripture mention a large number of persons of both sexes who had their sexual glands removed. According to Alexander Severus they constituted a third sex (*tertium hominum genus*); Juvenal calls them "semivires;" Lucan, "unnatural monsters;" and Ovid compares them with the dessicated trunks of decayed trees. Vossius (*Etymologicon linguæ latinæ*) was of the opinion that the Persians were the first to indulge in the practice of castration; hence the Latin word "spado" from the Persian town, Spada, where the first castrations known to history were supposed to have taken place. The truth of this assertion appears dubious since the first eunuch of whom mention is made in any writing, figures in the Bible. This distinction belongs to Potiphar, the Egyptian general, who bought Joseph from the Ishmaelites, and whose wife, on account of her husband's defect, played a rather unconventional part in Joseph's early career. Though ablation of the sexual glands in man was repeatedly done in antiquity, its frequency may be attributed to the simplicity of the operation. On the other hand, what must not have been the obstacles, some 2,000 years ago, to ovariectomy, when even to-day the operation is not the easiest procedure in surgery! But students of this interesting chapter in medical history should not overlook the fact that what we understand as ovariectomy was not the operation in vogue among the Oriental people. Thus, with the Kreophagians, castration consisted of excision of the labia minora and the clitoris.

ORIGINAL ARTICLES.

THE DEVELOPMENT OF MILK LABORATORIES IN CONNECTION WITH THE DISPENSING OF FOOD STUFFS.*

By THOMAS MORGAN ROTCH, M. D., of Boston.

A food is a substance which, when taken into the living organism, is capable of building up or repairing tissue, or yielding energy, or both. In this sense we have to deal with, in our care of the health of human beings, certain food stuffs which represent all that makes up the various combinations of required food and is recognized as being practically sufficient for life. Food acts according to what each class of food stuff can accomplish. That is, as to whether, as a class, these food stuffs provide means for keeping up the animal heat, or in repairing waste. In these respects the food indicated in early life does not differ from that for later life. In early life, however, a greater amount of building up of the tissues in proportion to the breaking down is needed, than is the case in adults, where these two factors of the problem of life should practically be equalized.

Milk represents a complete food, for growth, repair, and for caloric energy. Milk, however, does not contain all the variations of each food stuff. For instance in the class of carbohydrates represented by starch. It does, however, contain certain variations, or stages of change of all the food stuffs, and all the variations requisite for the first year of life.

Certain functions of digestion and absorption are not developed in the first year of life, and hence to bridge over this stage of undeveloped though developing functions milk provides more or less predigested food stuffs. For instance, lactose, in the sense of one of the food stuffs, sugar, represents a predigested starch. In saying this, however, I should explain that in the process of digestion starch is converted first into maltose and then into dextrose, while lactose is converted at once into dextrose. In this way the end results are the same, but the digestion is relieved from having to deal with starch as such at all.

A milk laboratory should be a place where all variations of food stuffs, which are required for early life and most of those for the abnormal conditions of later life, can be obtained. In specific cases, es-

*A paper read before the Boston Obstetrical Society, February 16, 1909.

pecially, certain organisms. should be kept ready for use in the laboratory. As an example of this the lactic acid bacillus can be kept in pure culture, ready for immediate use, in the laboratories according as the physician wishes to prescribe it. I wish, however, to especially draw the attention of physicians to the possibility of what use a perfected milk laboratory can be put to, and how desirable it is to apply the same principles of percentage feeding, which have been proved to be so valuable in the treatment of early life, to the many instances, especially in convalescence and in gastro-enteric disturbances which so frequently arise in adult life.

A great opportunity is also open to us for dealing with the dietetics of the second year of life by applying the advanced laboratory principles of percentage combinations in connection with a caloric basis for the administration of food. Some of the advances which have been made in the treatment of milk and the practical carrying out of the laws of physiological chemistry, which have emanated from the milk laboratories, may be stated as follows:

1. The institution of percentage feeding.
2. The proof that a finely adjusted range of the various food stuffs, fats, carbohydrates, and proteids, can be obtained in exact percentages and combinations of percentages.
3. A mechanical instrument of precision by which percentages can be mechanically adjusted for prescription purposes.
4. A clear statement of what combinations of percentages of food stuffs can be obtained with high or low percentages of individual food stuffs, which includes the necessity of high or low fat percentage creams.
5. The possibility of prescribing a divided total proteid.
6. The combinations which can be used of whey proteids and casein, of exact high or low percentages.
7. The practical application of alkalis to obtain specific results.
8. The practical use of the lactic acid bacillus, either for digestive purposes, or for the combating of actual disease.
9. The experimental successful results of producing a definite lactic acid coagulum fine enough to pass through a nipple readily.
10. A milk sufficiently free from bacteria to practically do away with Pasteurization, especially for long distance transportation.
11. The example shown to the public of to what perfection a model milk farm, where with medical scientific precision and unstinted provision of funds to carry out the finest details relating to the preservation and dispensing of hygienically protected cattle and milk products, can be carried out.

Witness the costly farm plants at Plainsboro, New Jersey, at Charles River, Massachusetts, and at Burnside, Baltimore. I have already in a previous article explained the reasons for, and the variations in, the use of the different food stuffs which stand as laboratory products and as

shown in Table 1. It is very evident, therefore, that we should intelligently acquire a knowledge, *first*, of what products can be obtained from the laboratories; *second*, how and to what extent these products can be used; *third*, what are the indications for their use.

The following table shows the representative examples of all food stuffs which can be obtained in the milk laboratories of the present day and also impresses on us how many advances have been made directly through the scientific work of these laboratories, and the laboratory investigations of the skilled dieticians connected with the laboratories. The principles of physiological chemistry have, in these laboratories, a fair field for actual practical use, and it now remains for us physicians to make use of the opportunities thus given to us, and to clinically prove which of these supposed principles are correct, and which illusive. It is also fair to note, from a philanthropic and humanitarian point of view, the good work which, as life-saving institutions, these milk laboratories are doing, not only for the rich but for the poor. Witness the thousands of quarts of milk which are yearly sent to the deserving poor from the milk laboratories at actual cost, or with only nominal profit to the laboratories, and sometimes at an actual loss, as seen in the deliveries of percentage prescriptions to the hospitals.

TABLE 1.

Food stuffs to be obtained in the milk laboratories.

Fat, varieties	<ul style="list-style-type: none"> { Fat obtained from different species of cows. { Fat for easy digestibility from containing a large proportion of the stable glycerides rather than of the volatile glycerides. { Fat obtained by gravity. { Fat obtained by centrifugal separation.
Carbohydrates, varieties:	<ul style="list-style-type: none"> { Lactose. { Maltose. { Sucrose. { Glucose. { Dextrose. { Starch. { Dextrinized starch.
Proteids	<ul style="list-style-type: none"> { Whey proteids. { Casein. { Peptonized.
Micro-organisms	Lactic acid bacillus, <i>Bulgaricus</i> .

We must consider the digestive tract as an ideal incubator which may be used either for the favorable or unfavorable development of bacteriological, chemical and physiological changes which may take place, particularly in the proteid constituents of the food stuffs. This fact has been brought out forcibly in the admirable work of C. A. Herter on "Bacterial Infections of the Digestive Tract."

In this connection we are in a position to say that in accordance with the exhaustive work of North and others concerning the antagonism which exists between different forms of bacteria and particularly between the lactic acid bacteria and some of the putrefactive and pathogenic species, that the Bulgarian lactic acid bacillus has been found to be the most virile and efficient of the lactic acid organisms thus far studied, though the strain isolated by Dunn has also proved most effective. This microörganism under favorable circumstances displaces all other forms of organisms, benign, especially fermental, and in some cases pathogenic.

With the present limited knowledge which we have of this matter and with the insufficient means which are at our disposal for detecting various abnormalities of digestion, we have a very difficult problem to solve. We must, however, on entering into this discussion and in attempting to tabulate this limited knowledge, first be on our guard not to really create a food digestive weakness by an unwise use of the different food stuffs. If the individual digestion was carefully studied from the very beginning and the proper percentage of each element of the food intelligently adapted to it, we should not in most cases meet with what have been called idiosyncrasies of digestion. These so-called idiosyncrasies, on the contrary, really represent over and over again merely normal variations.

It is exceedingly uncommon, if a young baby from the very beginning of its life is fed by laboratory methods, and with the precision which can be obtained from the food stuffs in the laboratories as supplied from the laboratory farms and by one who is really an expert in infant feeding, to have disturbances appear. These disturbances usually arise in cases where the digestion has manifestly been tampered with by unwise and in that sense unintelligent food prescriptions. If high percentages are begun with at once or in wrong combinations there will undoubtedly result gastro-enteric disturbance, no matter whether such percentage combinations represent what we suppose are the proper caloric equivalents or not.

I should, therefore, say that whether we are dealing with a new-born infant, in which case the problem is an easy one and trouble seldom arises, or with a digestion already disturbed by unwise percentage combinations, we should invariably begin with low percentages, such as 1% fat, 5% lactose, .25% whey proteid and .15% casein. Watching carefully the effect of these percentages we should then gradually increase them. We should be sure, however, and not get above a reasonably high per cent. even in what is evidently a strong digestive capability. Herein lies the danger of over-taxing even a strong digestion and although certain digestions will resist and possibly thrive on this over-supply of food stuff, yet as a rule most cases will finally succumb to what are really unnatural conditions, and in the long run much useless harm will be done to the majority of infantile digestions.

If we always keep a little under rather than over what has in the hands of the best feeders been proved to be the top limit of the percentages of the various food stuffs, namely 4% fat, 7% lactose, and 3% or 3.50% proteid, the best results will be obtained in the substitute feeding of infants. It is unreasonable to go above these somewhat empirical, but from the widest experience practical and sensible percentages, unless we are treating some special conditions where a high percentage of one of the elements of the food is evidently indicated. These latter classes of cases, however, are rarely met with and a much more advanced knowledge of infantile dietetics and much greater intelligence are required to deal with them successfully. The most careful study and mature judgment is also called for in deciding on the time and in gradually making the proper changes when we wish to wean the infant from the divided proteid, which has arrived at a whey proteid of .80% and a casein of 1.15% to an undivided proteid which should never, on a conservative basis, be started on a total proteid of over 1%.

The practical means of using the various food stuffs spoken of in Table 1 have already been described in my article in the *Archives of Pediatrics*, September, 1908, on "Modern Laboratory Feeding and the Wide Range of Resources Which it Provides." In that article I have explained the action of alkalies and starches on the proteids; the relative value of the carbohydrates; the relative meaning of the different qualities of fats, with the different reasons for making use of them in various ways; and the lactic acid bacillus, whether for purposes of digestion, or for combating intestinal fermentation. I shall now take up the third proposition, spoken of above, namely, what are the indications for the use of the various food stuffs provided by laboratory products. To intelligently approach this subject, however, we must appreciate that the digestive function for all food stuffs varies in health and in disease. In this sense we meet with a great variety of conditions in which varying percentages of all the food stuffs, from low to high, are indicated. This is in accordance with the weak or strong developmental capabilities of the individual human being whom we are attempting to feed. In this sense we have to treat the various food functions of an individual taking into consideration any decided idiosyncrasy in one direction or another which may result in what is designated as a weak or strong fat digestion, sugar digestion, starch digestion, or proteid digestion. As a corollary to this we must use every means in our power to determine whether one or all of these conditions are present before we can intelligently decide upon what percentage treatment is indicated in the especial case. In fact, as I have said over and over again, the food in its caloric value, percentages and combinations of percentages must be adapted to the especial infant's digestion. There is no one ideal combination of percentages which we can use and follow as a royal road leading to a successful feeding.

If an infant is not gaining in weight, but is having normal movements and no evident signs of indigestion, such as vomiting or

distention or pain from gas, the probability is that the food is too low in one or more of its percentages—probably the fat,—and in consequence its caloric value is too low. It must be remembered that indigestion in the milk fed infant does not depend upon the fact that the food is milk, but upon improper combinations of ill-advised percentages of the food stuffs which make up the especial modification used. It is, as a rule, therefore, the fault of the physician who writes the prescription rather than of the milk laboratory which supplies what is called for.

When, after employing the usual percentages, which in ordinary normal digestions have been found to suit certain groups of development, we have decided that we have to deal with an infant's digestion, which is weak in certain of the food stuffs, whether fat, lactose, or proteids, we should then begin to minimize that especial food stuff in our food prescription. When we minimize we reduce just so much the value of the caloric equivalent of the food and its nutritive capacity. We should, therefore, in order to guard the nutrition of the infant, increase the nutrition and heat energy of the food by increasing the percentage of the other food stuffs mentioned in the prescription, carefully doing this in the case of the remaining food stuff or stuffs which we find the especial individual can easily digest. In this way we intelligently combine and make use of percentage methods and include caloric values.

The question of the symptomatology of the gastro-enteric tract in connection with its functional and digestive side is an exceedingly complex one. Vomiting as a symptom, and in fact almost the only symptom which in most cases suggests functional disturbance of the stomach, is in its turn not an entirely characteristic gastric symptom. It is now well-known that disturbances of the intestinal tract whether from organic or functional causes may produce reflex vomiting without a disturbance which could be called gastric, occurring in the stomach. In a general way an excess of fat beyond the capability of the individual fat digestion is prone to cause vomiting, a distaste for food, rather loose discharges and at first pronounced yellow and later greenish yellow movements which contain an excess of fat and small, fine, yellowish white masses of fat simulating at times the curds of casein, but easily differentiated chemically. Excess of sugar often shows tympanites from gas and resulting abdominal pains, an odor of lactic acid fermentation in the breath, and greenish, sour or acid movements with little or no odor. Excess of proteids shows as a result vomiting of casein curds, pain, green and white movements with curds more or less large and tough of casein, and frequently a marked odor, more or less foul, according to the kind or degree of the fermentative processes going on and whether there is much albuminous decomposition.

The supposition in these cases is that when acid fermentation with its supposedly sour odor is present a reduction of the percentage of sugar is indicated. Yet when all is said we are not yet in a position to state positively, and without reservation, that these distinctions are sufficiently

proved to form a clear and definite symptomatology and we must look to physiological chemistry, in the future, to give us the true symptomatology of functional gastro-enteric disturbances, by showing which of the intestinal secretions are increased, decreased, or changed and also the exact composition of the faecal discharges as affected by functional disturbances. The detection of and the differentiation of the various functional disturbances of the gastro-enteric tract both in regard to each other and to their separation from organic conditions, is rendered still more complex and difficult when we consider that early life presents especially difficult and misleading symptoms and signs.

TABLE 2.

GASTRIC SYMPTOMS.

	VOMITING	PAIN	ODOR OF BREATH	VOMITUS	GAS	URINE
Fats	+	—	Usually no odor. In extreme cases odor of butyric acid (rancid butter)	Soft flakes of fat	O	O
Sugar	—	—	When present due to lactic acid (sour)	Soft Curds	No odor. Due to carbon dioxide. The sugar is changed to lactic acid and then to carbon di- oxide and hy- drogen, which are without odor	O
Pro- teids	+	+	—	Tough Curds	—	O

ENTERIC SYMPTOMS.

	DIARRHCEA	PAIN	ODOR	COLOR	CURDS	GAS	URINE
Fats	+	O	O	Mixed Green and Yellowish White	+	O	O
Sugar	—	—	Sour from lactic acid fermenta- tion	Greenish acid re- action	O	O	Sugar, and might show tem- porary al- buminuria
Pro- teids	—	+	+ foul al- buminous decompo- sition	Mixed	+	+	Indol Skatol Purin

+ means present or marked; — means absent or insignificant; O means absent.

The intestinal contents so far as mucus and blood or lack of membrane are concerned, are very illusive for diagnosis. Membrane may be present in intestinal lesions and yet not appear in the faecal discharges. Mucus may be present simply from mechanical irritation or from nervous influences. Blood may appear in the faecal discharges and yet no perceptible organic lesions be present.

I have endeavored to give in tabular form what we really, so far, do know of the indications which suggest to us the status of an individual's fat, sugar, or proteid digestive capability. I have made this table as simple as possible with the hope that it may aid those who wish to intelligently and practically feed young infants by first carefully diagnosing their especial gastro-enteric condition. These recognizable conditions, few in number though they at present may be, yet constitute a nucleus around which we may build a greater and greater circle of physiological and chemical discoveries and facts until we are in a position to state a rational method for making a differential diagnosis of functional gastro-enteric conditions as we are in the more perfected symptomatology of organic diseases.

The signs and symptoms of functional gastro-enteric conditions in the digestive disturbances of early life, with special reference to showing the effect produced by the different food stuffs when in excess.

A CASE OF BENCE JONES ALBUMOSURIA ACCOMPANYING
MYELOID SARCOMA OF THE HUMERUS CO-
INCIDENT WITH TRAUMA.*

By GEO. W. CALE, JR., M. D.,

Clinical Professor of Surgery in Washington University, St. Louis.

In 1847, Henry Bence Jones, of London, reported to the Royal Society that in November, 1845, he had examined a specimen of urine, referred to him by Dr. Watson, which contained a thick yellow semisolid substance. The urine was of a high specific gravity and showed some variations in its coagulability. On account of the peculiar reaction shown after the addition of nitric acid and the application of heat, Jones was induced to investigate the nature of this substance more carefully and came to the conclusion that it was not an albumin, but an albumose. The clinical history and details of this case were published by MacIntyre in 1850, and after post-mortem it was thought that the man had died of osteomalacia fragilis rubra, the disease having affected the ribs and vertebrae. The affected bones were so soft that they could easily be cut through with a knife, the diseased parts being somewhat granular and of a reddish gray color.

Attention was not called to this unusual urinary phenomenon again until 1883 when Kühne published a report of his examination of some urine made in 1869, in which he found this peculiar substance which is called Bence Jones albumose. In about nine months after his examination the patient died and diagnosis of osteomalacia was made, no post-mortem being held.

The next to report a case were Kahler and Huppert; their diagnosis was osteomalacia, the urine showing the Bence Jones reaction, but upon the death of the case the post-mortem revealed multiple round cell sarcoma of the bone marrow.

Observation of this condition in bone disease was very rare, for from 1847 to 1897 only four cases were reported. Up to date about thirty-five cases of Bence Jones albumosuria, associated with myeloma, of bones, have been reported.

It has never been found in multiple carcinoma of bones, although several investigators have looked for it.

The time of appearance of the albumose is usually before the disease of the bone is recognized. Stokvis, however, reports a case in which the albumose did not appear until late in the course of the disease and disappeared sometime before the death of the patient.

*Read before the St. Louis Surgical Club, April 14, 1909.

It has been found in quantities varying from .25% to 6.9%. The exact nature of the substance is not known. All investigators agree that it is similar to but still differs from the known digestive proteoses.

Welch believes that the cases of bone tumors in which Bence Jones albumose is present are not true tumors in the Cohnheim sense, but are of the nature of granuloma.

In the vast majority of cases reported the tumors have been multiple, a number of bones being affected simultaneously.



FIG. 1. a—head of bone. b—small piece of undestroyed bone.

Albumose, giving the Bence Jones reaction, has been found by Coriat in pleuritic effusion, while in this case it was absent from the urine.

Boston considers the reaction which is most reliable to be that with lead acetate and caustic soda for the detection of sulphur. Many chemists report that loosely combined sulphur is a pre-eminent feature which distinguishes Bence Jones albumose from other albumoses.

The most prominent characteristic of the Bence Jones albumose is its coagulability at or near 50° C.; the slower the heat is applied to the test tube the heavier the precipitate. The point of coagulability is much below that of serum albumin or egg albumin, and is the reason attention was first called to the peculiar urine of the case to be reported.

In the true sense the albumose is not coagulated by heat and acids, but rather precipitated, for upon boiling the precipitate disappears or is redissolved and reappears as the liquid cools.



FIG. 2. Soft parts of arm removed, showing destruction of bone (b) shown in Fig. 1.

A precipitate is formed upon the addition of cold nitric acid to urine containing this substance which is redissolved on boiling and reappears when the liquid is cooled. Similar results are obtained with hydrochloric and sulphuric acids.

If acid urine is neutralized with sodium or ammonia no precipitation results.

If acetic acid be added to the urine, heat will not precipitate the albumose.

If a saturated solution of sodium chloride be added to the urine which contains acid, complete precipitation will take place on heating, but in this instance the precipitate is not redissolved upon boiling.

If alcohol be added to the urine in the proportion of two to one, precipitation occurs; this precipitate is insoluble.

Picric acid produces a precipitate which does not dissolve upon boiling.

Formalin added to the urine produces at first a very slight cloudiness, but upon standing a heavy precipitate occurs.

Saturation of the urine with magnesium sulphate causes no change, but upon the addition of acetic acid a heavy precipitate is thrown down.

The biuret reaction (caustic soda and copper sulphate in weak solution) is positive, producing a rose-pink and violet color.

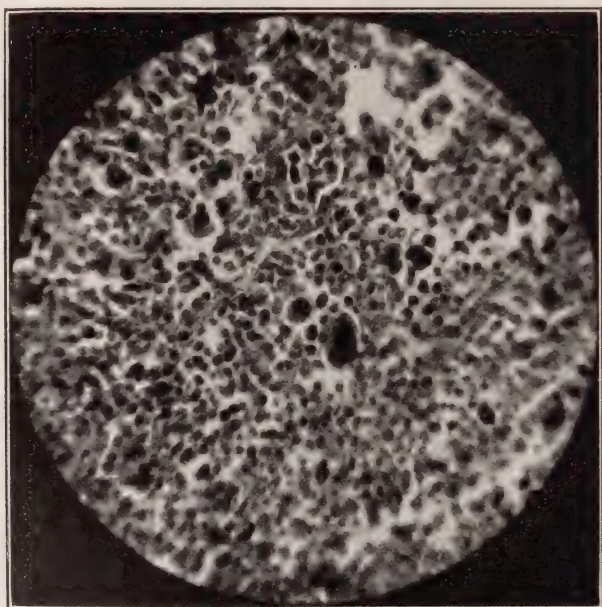


FIG. 3. Myeloid Sarcoma, showing giant cells (x 245).

Bence Jones albumose differs from proto-albumose and hetero-albumose in that it is not completely precipitated with sodium chloride in neutral solution. It resembles hetero-albumose in that it is precipitated on addition of acetic acid after saturation with sodium chloride or magnesium sulphate, but differs from it in being precipitated at a lower temperature. (Boston.)

It should not be confused with the secondary albumoses so frequently found in the urine of the febrile and septic diseases, the reaction of these albumoses being different from those of the Bence Jones substance.

Secondary albumoses do not precipitate upon boiling nor on saturation with sodium chloride, when the reaction of the urine is neutral, but if

acetic acid be added to the urine, saturated with sodium chloride, precipitation occurs.

Simon—*Amer. Jour. Med. Sciences*, 1902—gives a summary of twenty-two cases of Bence Jones albumose occurring in multiple myeloma. A diagnosis of osteomalacia was made in Jones' first case, but it is probable that the disease in reality was myeloma.

After an exhaustive study of the subject, Simon concluded:

First, that the presence of the substance in the urine of man usually indicates the existence of multiple new growths affecting the bones, and generally myeloma.

Second, that myeloma may apparently occur in the absence of the peculiar albuminous substance.

Third, that the existence of the urinary condition in association with other diseases without involvement of the bones is not as yet proved by the report of any case in which a careful post-mortem examination has been made.

Fourth, that malignant disease of the bones, in general, may exist in the absence of the Bence Jones albumin from the urine.

Little is known of the origin of Bence Jones albumose. It has been found in the blood of patients suffering from multiple myeloma, and also in the tumor itself. Urine containing large amounts of the Bence Jones albumose, unless containing the albumin of nephritis, shows no tube casts, nor kidney cells; neither are there any of the physical signs of nephritis, such as dyspnea, edema of the extremities or eyelids, or heart complications, etc. There is usually a marked degree of anemia present.

Only one of the cases enumerated by Simon was operated upon, the other investigations being clinical, post-mortem, or both.

The case in question is one in which the Bence Jones albumose was recognized almost simultaneously with the bone disease which was discovered by means of the *x*-ray.

Our attention was first called to the presence of albumose by its precipitation at a low degree of heat, and the presence of a pinkish froth in the tube. The precipitate, which was very heavy, was redissolved upon boiling. The specific gravity of the urine was high and it contained no casts or other organic cellular matter.

Urinalysis—24 hour specimen—80 ounces—no sediment:

Specific gravity	1020
Acid.	
No casts nor other organic cellular matter.	
Albumose	1.54%
Albumin06%
Blood examination:	
Hemoglobin	85%
Red blood corpuscles.....	7,200,000
White blood corpuscles.....	18,125

Pressure:

Systolic	140 m.m.
Dyastolic	88 m.m.

The patient is a man of 50 years of age, large and powerfully built, and of good family history. At 30 years of age, he had pneumonia; in 1901 yellow fever, and on several occasions has had slight attacks of rheumatism and malaria. About one year ago he had a slight injury to his hand, for which he was treated by his local doctor. At that time an examination of his urine showed that it contained a large quantity of "albumin."

The patient has noticed that for the past two years his urine was very frothy when voided, although he made no mention of this to his physician.

Less than a year ago, I am told, the patient was examined for life insurance and accepted as a first-class risk.

During the fore part of October, 1908, he was assisting in jacking up a derailed car to put it back on the track. The jack slipped, the handle striking the patient on the left arm about the insertion of the deltoid muscle. The man experienced considerable pain, which lasted until the next morning when his arm was put in a splint by a local physician, who made a diagnosis of fracture. At the end of seven weeks the splint was removed and the patient was able to move his arm so well that he planned to return to his work—that of locomotive engineer. About this time he was making some repairs in his house and in moving a stove he slipped on the floor and in an effort to balance himself gave his arm a severe jerk which caused him great pain for about ten minutes. This did not subside completely and the arm became swollen and in a short time almost useless. The swelling became more pronounced and on December 22d, 1908, he came under our care in Saint Louis, stating that he had sustained a fracture seven weeks previous. No evidence of fracture could be made out on physical examination and on December 24th, 1908, a radiograph was made which showed the left humerus in good condition and no evidence of a fracture. The entire extremity was edematous and it was not possible for him to use it without causing him great pain, the pain being more pronounced along the course of the musculo-spiral nerve.

About the middle of February, 1909, the patient developed a typical case of facial erysipelas. He was sent to the contagious ward, given a few doses of antistreptococcus serum, and was well again in about ten days, having suffered very little inconvenience during the time.

On March 4th, 1909, examination of the arm showed that there was some movement in the humerus and a radiograph disclosed complete loss of bone from a point one inch below the head of the bone, extending downward about four inches; the balance of the bone showed very plainly on the plate and appeared to be in normal condition. What was equivalent to a pathological fracture had occurred, the entire bone having

been destroyed by the growth. A diagnosis of myelo-sarcoma was made and on March 22d, 1909, the arm was amputated at the shoulder joint. The tumor occupied almost the upper half of the bone and the upper third of the shaft was entirely destroyed, being indistinguishable from the medulla, its place being occupied by a soft, grayish, gelatinous mass which extended up into the head of the bone.

Microscopic examination proved the case to be a giant-cell sarcoma.

The patient made a nice recovery and left for his home seventeen days after the operation.

Several very careful examinations of the patient were made in order to detect, if possible, any other bone involvement, but these examinations were negative.

The patient's urine was examined daily from the time of his operation until he left but it contained about the same amount of Bence Jones albumose as before the operation.

It will be interesting to observe whether this substance continues in the urine or whether in time it will disappear.

From the history of the case, we believe that the albuminous substance found by his physician a year ago was in fact Bence Jones albumose.

The case is peculiar in the apparent long existence of the albumose before the appearance of the bone disease and in there being only one bone involved.

It is also remarkable that such complete destruction should have taken place in about two months, for the radiograph shows that on December 24th, 1908, the bone was in practically normal condition.

The patient was disposed to attribute the trouble to his injury sustained in October, 1908, but I am inclined to believe it was rather coincidental, or at the most a slightly contributing cause, inasmuch as the albumose was apparently present for a long time before the development of the myeloma. Had the nature of the growth been periosteal sarcoma-tous, then we would have had better ground for giving the injury as the cause of the growth.

This is the second case which has been recognized and come to operation, the other case operated upon being reported by Ewald, who removed the right clavicle—it being the seat of a myeloma; the other cases being inoperable on account of the number of bones involved.

DIET AS A PROPHYLACTIC AND THERAPEUTIC.

By H. W. WILEY, M. D., of Washington, D. C.

There is an increasing belief in the medical profession, and this belief is founded on substantial evidence, that diet is an important factor in the production and cure of disease. Both the words "production" and "cure" are used here in their ordinary sense, meaning as aids to, or favorable to, and not as possessing specific properties of production or effacement. By reason of the provisions of the Food and Drugs Act the term "cure" is now somewhat restricted in its applications. The common practice of advertisers of patent or proprietary medicines in the past was to advertise them as a "cure" or "sure cure" or "infallible cure" for various diseases, and also to place similar statements on the labels. Since the law was enacted forbidding the use of a statement which was false or misleading in any particular, and especially since the courts have judged that the word "cure," in the strict sense of that term, may not be applied to a remedy or medicine, less use is made of the word. For this reason I have used the term above in the restricted sense of establishing favorable conditions whereby the natural removal of the disease might take place, rather than as exerting a specific influence in the removal of the disease and the restoration of the diseased organ to a state of health. I propose to eliminate from the present discussion the well-known effects of adulterated or debased foods in the promotion of disease, and shall confine myself in the main to the influence of nutritious, palatable, wholesome, and clean foods, both as a preventive and as a remedy.

If we accept the modern theory of specific infection in the etiology of disease, we should also accept its attendant theories, which may be briefly stated as follows: A perfectly healthy, well nourished organ becomes infected with any disease germ with great difficulty; in other words it is self protective. I shall not enter here into any details concerning this theory, but only state it briefly. Granting this, therefore, it is self evident that the food or diet must play a most important part in the prevention of disease. The normal condition of the body, or any organ of the body, and hence its maximum power to protect itself against infection, is directly dependent upon the character and the amount of the diet. It follows then as a necessary conclusion that the debasement of the diet, the addition of injurious substances thereto, or the abstraction of valuable ingredients therefrom,

*Read at the Annual Meeting of the American Therapeutic Society, New Haven, Conn., May 6-8, 1909.

diminishes the power of that diet to maintain the body in a state of hygienic equilibrium. Hence, the normal condition follows when foods are furnished of a proper quality, assuming as a basis of the discussion that such foods shall not be so manipulated as to incorporate with them an ingredient injurious to health; to take from them any quantity of their nourishing properties which would unbalance their nutritive value; or to treat them in any manner so as to impair their power to sustain life.

The second condition regarding diet as a prophylactic is its quantity. It will be easily understood from the above assumption of the basis of discussion that the proper quantity of food to maintain the equilibrium is a condition of efficiency. If less food than is necessary be ingested the body must lose a portion of its sustenance and a part of its ability to withstand infection. On the contrary, if a larger quantity of food is ingested than is necessary, an additional burden is placed upon the organs of digestion in ridding the body of the excess, or of storing the excess of nutriment in some form, usually that of fat, in the tissues of the body. Either condition must be regarded as unfavorable to complete prophylaxis, and hence either a deficiency or an excess of food would to that extent predispose to diseases of the kind mentioned. It is, of course, understood that these variations within ordinary limits are not of any appreciable effect. If on one day a person should eat a little less food than necessary for normal nutrition, and on the next eat a little more, varying in this way from time to time, no appreciable effect would be noticed. On the other hand, the person who continuously uses less food than is necessary, or one who continuously uses more than is necessary, must to that extent become more obnoxious to disease. In the second place, assuming that the total quantity of the food remains the same, any marked and continuous change in the relations of its natural constituents must be looked upon with suspicion.

The normal food of man, and of other animals as far as that is concerned, may be divided into five great classes, namely, protein, fat, sugar (starch, etc.), minerals, and waste or indigestible portions. Each of these constituents has a useful function and the sum of nutrition is the normal ingestion of all of these ingredients in their usual proportions. Here again it must be acknowledged that slight variations in distribution of ingredients may take place without any notable injury, just as is the case with the variation of total amount of nutrients. But if one essential ingredient to which the human body is accustomed, and on which it has been developed to its present state of normal equilibrium, should be persistently removed from the food, in my opinion the ultimate power of resistance to disease of mankind would be diminished. It is well known, for instance, that a diet of protein alone will speedily lead not only to danger of infection, but also to positive weakness and starvation. In like manner a diet of carbohydrates alone would result in the same condition, and this is true of a diet of fat, or a diet of

the mineral constituents, or a diet of the waste constituents. I take it as a proposition very difficult to disprove, and sustained by every principle of analogy and reasoning, that the ordinary normal diet of man, selected by the necessities of nutrition and by taste, is considered all in all the best. To illustrate more particularly, I heard the Surgeon General of the Japanese Navy, in a lecture in Washington about two years ago, ascribe the disease known as beri-beri to a carbohydrate diet. Rice being one of the principal foods of the Japanese, and almost the only food of the poor, the Surgeon General ascribed the prevalence of beri-beri among the Japanese, especially the Japanese sailors, solely to the use of that diet. On the other hand it has been thought that scurvy is a disease due largely to the elimination from the dietary of the vegetables that are eaten in the normal condition of nutrition. These two illustrations, which are more or less founded upon observation and scientific investigation, I think may be accepted as at least indicative of what might be expected should any usual elements of the diet be either increased or decreased proportionately to the other elements.

Among other statements which have been made in this line by most eminent men, and those whose scientific learning and judgment we all respect, is the one that the normal diet of man, especially in the United States, contains too large a percentage of protein. Data have been collected in an experimental way which tend to show that a diminution in the amount of protein in the food leads to very beneficial results, increasing the strength and endurance of the subjects experimented upon. It is true that this conclusion has also been questioned by high scientific authority, and so we may regard it at the present time as neither established nor disproved by scientific data. Applying the principle of analogy to this condition of affairs, we may properly ask if a diet so low in protein should be continued for a long period of time, whether some notable injury would not be done to the human body which would render it more obnoxious to disease. In fact, might we not expect an approach to that condition of affairs already alluded to in the case of the beri-beri of the Japanese sailors? Might not there be other effects also not immediately noticeable which would render the general introduction of a diet into the United States containing, for instance, only half as much protein as that already consumed, dangerous to the general health of the community? I ask this without in the least calling into question the fact that the actual amount of protein which we consume may be greater than is desirable. In that case we should expect that the human body would be subject to other diseases, especially of those organs which are called upon particularly to excrete the protein, or its decomposition products, from the body. In other words if, for the sake of illustration, and the figures are somewhat exaggerated, we should assume that the normal, healthy man of the United States at the present day consumes 20 grams of nitrogen per day in the form

of protein and the man under the proposed regime only ten grams, would the new order of affairs produce a race of men less subject to disease than the present one? We might all admit that the reduction of the quantity of nitrogen from 20 to 18 grams might be desirable, but would not be inclined to go to the extreme of supposing that it should be diminished by one-half or two-thirds, or even more.

I need hardly refer here to another question in respect of wholesome foods in their relations to health, namely, that of mastication. I believe that all admit the desirability of mastication, both as a mechanical necessity preliminary to deglutition and also preliminary to the proper mechanical state for the first steps of hydrolysis in the process of digestion. This having been properly accomplished, the question may arise whether or not the carrying of mastication to excess might result, first, in diminishing the actual quantity of food necessary, and, second, in actually interfering with the proper process of digestion. Since the beginning of the human race, and before, the sense of hunger has been the normal gauge of the quantity of food ingested, and I think it must be admitted, if we believe in the principles of evolution, that this sense of hunger has fixed properly the quantity of food necessary. We need not discuss those abnormal cases where the natural sense of hunger leads to over-eating, or where its absence leads to under-eating, but I speak only of the average normal condition. I believe it may be accepted that excessive mastication, therefore, would tend to satisfy the sense of hunger with a less quantity of food than is needed in normal conditions. Let me put the case a little differently: Normal man must masticate his food in such a manner that it can be easily swallowed, and this fits it for the ordinary process of digestion. If a man should excessively chew his food it seems to me that it is almost certain that a less quantity of it would satisfy his craving. In other words, a man who gives his whole attention to mastication must necessarily in a short time lose the sense of hunger—in a much shorter time, in so far as the quantity of food is concerned, than he would otherwise. Hence, while it is perfectly easy of demonstration that a somewhat more extensive degree of comminution of the food may be desirable, it does not hold that it should be carried to extremes; or, putting it another way, speed of digestion is not to be regarded as synonymous with nutritive digestion. I think it may be easily understood that just the contrary would be the case. Suppose, for the sake of argument, that mastication could be continued until the food was reduced to its molecular condition. Such food, we might assume, would be digested almost instantaneously, but if the absorbent system remains in its present condition it would be quite impossible for that food to enter the circulation in an instantaneous manner. Much of it would necessarily, in the natural motion of the intestinal organs, soon pass beyond the region of absorption and escape entering into the nutritive processes entirely. Thus I venture to ask the question whether it may not be possible that excessive mastication, that is, converting the

meal hour into a mere mechanical exercise, may not in the end threaten the human family with grave dangers of insufficient nutrition? I ask this question without in the least denying the principle that mastication is a desirable and necessary process.

I come now to the second part of the discussion, that is, a condition where disease has already become established. What, now, is the function of food respecting its therapeutic value? Every physician recognizes the necessity of sustaining to the utmost the vegetative functions of the body in disease. Disease, as it usually is found, may be defined as that condition of metabolism in which katabolism is more active than anabolism. In another sense the contrary is true, and the excessive production of tissue, especially of adipose tissue, is in some respects just as much a disease as the loss of weight, which we usually associate with most diseases. In my opinion, the disease which results in hypertrophy may, as a rule, be entirely controlled by diminishing the amount of the diet, unless it has gone so far as to be practically irremediable. The excess of activity of anabolism is associated very frequently with advancing years. The habit of eating becomes fixed in childhood, youth and manhood, that is during the period of growth and maximum activity of life. When senectitude approaches, if the habit of eating remains unchanged, larger quantities of food are ingested than are required for the new conditions that attend incipient old age. There is thus an accumulation of tissues which may become of a character conditioned upon an actual derangement of nutrition. On the other hand the condition usually found in disease is the activity of katabolism. The moment the temperature of the body rises above the normal, katabolism gains the ascendancy. This is based upon the plain laws of thermodynamics. The waste of tissue which is the attendant of disease often becomes so great as to threaten and even actually cause the death of the patient. To combat this condition and stimulate anabolism, food of a proper kind is one of the most valuable of the armaments of the physician. But in this condition we have an entire change of relations. The natural desire for food usually has passed away. The character and activity of the digestive ferments are changed. There is often actual disease of the digestive organs themselves, and when not actually diseased their activity is so impaired by the disease of other organs that they cannot be treated as in the case of health. Hence the use of food in disease is regulated by entirely different conditions from the use of it in health. I may say that the introduction of drugs of any description into foods that are intended for invalids is not only undesirable, but, in my opinion, criminal. Let me illustrate this by a simple statement: Among all the foods that are proposed for conditions of disease, there is none so valued as milk. The value of sweet milk as a food, even in a state of health, depends largely upon its purity and freshness, and in a state of disease these two qualities are absolutely imperative. The healthy man may use considerable quantities of milk that contains

millions of organisms per cubic centimeter, or milk dosed with formaldehyde, boric acid, benzoate of soda or other preservative, and receive no apparent injury; but the case is entirely different with the invalid. The ingestion of even minute quantities of these bodies, or of old milk not yet sour, may, and probably does induce positive injury. Even pasteurized milk may be undesirable, especially in the case of infants, as has been illustrated by the reports of many physicians. The healthy adult, in my opinion, can drink pasteurized milk with impunity, provided the milk was good when pasteurized and did not need pasteurizing, but the same good milk, pasteurized and used in a state of disease might be open to serious objections. Another illustration: Physicians often prescribe fresh fruit juices for invalids and convalescents. The fresh juices of the apple and of the grape are those usually employed. About a year ago Judge Morrow, of the Federal Court of San Francisco, came to my office on his way home from Germany. While there his physician had advised him to drink fresh, pasteurized apple juice, and he had done so with great benefit. He came to see me to ask where he could get fresh, pasteurized, unchemicalized apple juice in this country. I reluctantly told him that I did not know; that my experience in buying fresh apple juices on the market had led me to believe that they were almost universally dosed with some antiseptic, either salicylic acid, benzoate of soda, or sulphurous acid. He said his physician had told him to avoid all such mixtures. At the present date, however, I can say that matters have improved very much. Large quantities of fresh apple juice and fresh grape juices are now placed upon the markets without the addition of any chemical whatever, and they are preserved in a much more palatable and much more salable state than ever before. This is illustrated by a letter I have recently received from a manufacturer of fresh grape juice at Sandusky, Ohio, which is as follows:

"Sandusky, Ohio, March 25, 1909.

"We wish to state that the three barrels of Grape Juice which you and our Mr. Appel had sealed last October kept in first-class condition, as did also our entire output, and we are pleased to advise you that with the exception of a small stock of sulphur Grape Juice still on hand, which we are placing in a limited section of territory, that we have withdrawn the sale of Sulphur Juice altogether from the market, and are now offering nothing but the Absolutely Pure Article."

The first requisite which we should make for foods for invalids is that they should be pure. The next most important thing is to find a pure food that the invalid can digest. You cannot nourish an invalid *vi et armis*. You must find out what he can eat and give him that, whatever it may be, and if the digestive organs themselves are diseased, a greater care must be exercised. Very often sick people have an irreconcilable antipathy to articles of which when they are well they are frequently very fond, and this idiosyncrasy of the invalid must be respected by the physician. It has frequently been observed in cases of low nutri-

tion that sour milk, or kumiss, may be taken with relish and with benefit when other forms of food seem to be rejected. I am not a protagonist of the belief of Metchnikoff that sour milk is the elixir of life. A theory of this kind would have to be demonstrated, and it would take a hundred years to demonstrate it. But even from theoretical considerations the theory does not appeal to me, and I am not going to discuss it here. In my limited experience at the bedside of the sick, as physician or friend, I have seen some excellent results from the use of kumiss. In my opinion the physicians of this country should undertake to promote the production of a pure kumiss, and I do not mean by that that it shall be made of mare's milk as it originally was, nor do I use the word in the strict sense of the Food and Drugs Act—I mean good milk fermented in a bottle, or in other words "lacteal champagne." This is only mentioned, however, as one of the things that might be more properly prescribed in conditions where inanition is often a greater danger than the disease itself, and here I am led, in the kindest of spirits, to remark that the science of nutrition is unfortunately not very extensively included in the curricula of our medical schools.

I must also be allowed to say that the most preposterous dicta that I have ever heard concerning diet have come not from teachers of dietetics and cooking but from physicians themselves. In the progress of medical education the near future, in my opinion, will see the professorship of dietetics in a medical school advanced to the same rank as that of medicine, and I am even going further than this and say that the practice of medicine in the future will be largely a practice of dietetics.

I have the greatest faith in the future of prophylactic medicine and perhaps the day will come when the physician will be paid in proportion to the effectiveness of prophylaxis. While it is true that diet is only one of the factors in prophylaxis, as well as in therapeutics, it is, in my opinion, one of the most potent factors; and undoubtedly a symposium, such as that of to-day, in which all the various points of view relating to diet are prominently brought out, cannot fail of doing effective work for good.

LICHEN PLANUS, A GENERAL SYSTEMIC DISEASE. REPORT OF FOUR CASES OCCURRING IN TWO FAMILIES.

By M. F. ENGMAN, M. D., and W. H. MOOK, M. D., of St. Louis.

Lichen planus is considered by the majority of observers as a disease closely associated in its manifestations with the nervous system, on account of the nervous phenomena usually accompanying it, and which exhibit themselves as attacks of shivering, intense pruritus, feeling of nervousness, sleeplessness, etc.

The relation of lichen planus to the nervous system is indeed an interesting question and forces upon one, who has contemplated the subject at all, the two hypotheses: First, is lichen planus primarily a disease of the nervous system; or, secondly, is it an eruption due to the action of some chemical formed within the body through the processes of metabolism, or by general infection of some unknown microorganism?

It would be interesting to discuss these two propositions cursorily before we give the history of the cases that form the subject of the paper.

I. Is lichen planus primarily a disease of the nervous system? In favor of this hypothesis we have the various nervous phenomena which precede and accompany the disease. They usually occur in the form of chilly sensations, shivering, intense irritability to noises, light and heat, lassitude, sleeplessness, which are usually increased in intensity after the appearance of the eruption. In other instances they appear shortly before or after the appearance of the eruption. No one has seen an acute outbreak of lichen planus without being impressed with the clinical truth of this statement. The patients seem to be in an agony of nervous irritability for the relief of which powerful drugs are required. It is obvious that the irritability is not due to the intense pruritus, since we see other pruritic diseases in which the nervous symptoms are much less pronounced. For instance, in universal eczema and in dermatitis exfoliativa, where we have a far more acute active inflammatory disturbance in the skin, the nervous symptoms are much less intense. Again, in pemphigus and in dermatitis herpetiformis, they are not so pronounced. The only lesion of the skin causing such symptoms as those seen in acute lichen planus, are conditions where the integument has been destroyed in large areas by heat or chemicals.

Cases have been reported where the disease has occurred after a nervous shock, and are cited by authorities in support of the nerve hypothesis, as in the following: Case I. M. E. W., age 25, a ticket agent in a traveling show. On a certain day in May the patient was very much frightened by a cyclone which almost demolished the tent in

which his company was performing. The next day he noticed that his lips were whitened and felt as if they had been burned. A week after, a few lesions of lichen planus appeared on the palm of the right hand. Within a short time the whole surface of the body became generally involved. This patient had a severe attack of lichen planus which occurred not only upon the skin, but in the mouth and throat. The lips were very much crusted and had the appearance of being chapped. The patient had a marked intention tremor and felt exceedingly ill, when he made his appearance for treatment. This case would naturally be ascribed to the nervous shock occasioned by the cyclone, yet upon further inquiry he admitted that he was not in good condition for sometime previous to the occurrence of the storm.

The fact that a period of a lowered condition of health may precede the shock is often omitted. One of the patients which we report below, attributes her lichen planus to a shock occasioned during the terrible cyclone which visited St. Louis in 1896. On the other hand, Unna is under the impression that the irritation of the nervous system is a secondary symptom, due directly to the skin disease, and he further remarks that the disease can gradually disturb the general health of the patient; a disturbance which is more considerable in individuals already of a nervous temperament.

The linear, zoster-form and metameric distribution of the lesions of lichen planus have been brought forward as a point in favor of its nervous origin. Such forms of distribution, however, we see in certain curious cases of syphilis, and in eczema, diseases in which the eruptive phenomena probably have no primary etiological connection with the nervous system.

The beneficial results produced in lichen planus by certain therapeutic medication, almost convince one of the fact that the nervous and skin symptoms are both due to some specific cause, which the drug neutralizes or destroys. Injections of bichloride of mercury in large and increasing doses, such as one would employ in an active syphilis, produce such rapid and beneficial results that the effect of the drug here can only be compared to its action in syphilis, in which disease we know that all of the symptoms are due to a specific cause. In lichen planus, the administration of mercury in sufficient doses relieves the nervous phenomena before its action is marked upon the eruption. The following two cases, in which the nervous phenomena were most marked, are good illustrations of the specific action of mercury: Case II. Mrs. A. D., age 54. Diagnosis, lichen planus. When this patient appeared for treatment, she had not slept for several nights, and was subject to attacks of shivering, during which her teeth chattered; and this was accompanied by a feeling of what she expressed as "nervous excitability." She had had the disease for four months. The eruption was scattered over the body generally, with the exception of the face and hands. The itching was intense and came in paroxysms. The patient was put to

bed and an injection of one-tenth of a grain of bichloride of mercury was given daily. The subjective symptoms were relieved at once, and in one month from the day of her admittance to the hospital she was discharged cured. Case III. Mrs. W. S., aged 40. Diagnosis, lichen planus. The patient had been sick for some months, previous to the appearance of the eruption, with a colitis and proctitis. She had been in bed for the last two weeks, during which time she had received no relief from attacks of nervous anxiety, sleeplessness, and intense and terrible pruritus. The eruption was very acute, composed of thickly distributed acuminate papules, red at the base, which were scattered more or less over the whole of the integument. In certain areas the plane papule was typical and characteristic. When the patient arose from her bed, she was dizzy and trembled so much that she was hardly able to coördinate her movements, which was not due to loss of strength, as she was not very much weakened. Bichloride of mercury injections were begun at once, commencing with one-tenth of a grain, which promptly relieved all of the symptoms, especially the nervous phenomena, allowing the patient sleep and relief from the terrible periodical attacks of nervousness.

The cases thus briefly cited are examples of the fulminating acute types of the diseases, in which the nervous phenomena are the most marked, yet their relief by intramuscular injections of mercury is almost as pronounced as the action of salicylates in rheumatism. In the more chronic types of the disease, the action of bichloride is not so dramatic.

Fordyce, in a report upon the post-mortem findings in a fatal case of lichen planus, finds no evidence to confirm the supposed nerve origin of the disease, but rather that it is due to some toxin in the blood.

II. Is lichen planus a disease due to a toxin of metabolic or microbic origin? Brocq says: "We have a nervous system involved by toxic influence acting on the nerves, like the shivering which people regard as the first sign of a chill; this nervous depression is often the first suggestion of the action of the disease." He says further that many of the symptoms of the disease bear out this conception of a toxic casual influence, but that sufficient evidence has not been brought forward to lead us to believe that the disease is due to a definite microbic influence.

That lichen planus is constitutional, in that other tissues besides the skin are affected, we must admit, since a critical analysis of the literature and examination of a number of well-taken histories will force this conclusion. If lichen planus be a constitutional disease, in which the principal manifestations seem to be exhibited on the skin, we have an explanation of most of the phenomena observed in the disease: 1st, the mild arthritic complications; 2d, the periods of ill health preceding or accompanying the disease; 3rd, the nervous phenomena; 4th, the intestinal and bladder symptoms, which not infrequently precede or accompany the eruption. In Case III cited, this eruption was preceded for some months by colitis and proctitis, which were cured by mercury

injections. 'The following case is an example of the disease complicated by bladder disturbances.' Case IV. Mrs. E. Aged 60. Diagnosis, lichen planus. Mrs. E. had had several attacks of lichen planus, the former ones having been treated with arsenic. During each attack she has had some intestinal disturbance and, particularly, painful micturition. One of us saw the patient during her last attack, which was accompanied by the usual intestinal and bladder complications which were completely and promptly relieved by the internal administration of protoiodide of mercury. 5th, the appearance of lesions in moniliform bands, following scratch marks, as reported by Kaposi and others; the appearance of lesions after bites of insects; scratches of animals; scratches of pins, or at points of dermal irritation, we see in all constitutional or general diseases, in which eruptive phenomena on the skin is a prominent symptom, as for example, in syphilis and small-pox. 6th, the occurrence of lesions in the mouth, in the urethra (Huess) and probably in the bladder and intestinal canal.

Whether the constitutional condition which causes the disease is due to a specific microörganism or to some so-called toxic metabolic disturbance within the system, is impossible at present to decide. However, there are many facts and incidents occurring in the course of the disease which strikingly remind one of its similarity to known infectious constitutional processes, particularly to that of syphilis. The eruption of syphilis is usually preceded by certain well-known constitutional disturbances. In the majority of instances, however, as we see syphilis to-day, the constitutional symptoms are of such mild character that they are frequently overlooked, the patient's notice being attracted to their condition only by the appearance of the eruption. In others we have profound disturbances, in the form of high temperature, headache, anemia, etc. In syphilis, after the outbreak of the acute symptoms, patches are left which are resistant to treatment, and in certain cases relapses are frequent after several years, in spite of treatment. It is striking in this respect to take the histories of cases of lichen planus as we see them. Some patients, in whom the eruption was preceded by a long period of ill health, appear to suffer profoundly; others, in which the eruption was the first sign of the disease. Arsenic and mercury act as specifics in the majority of instances, but often fail to prevent a relapse, and we see these relapses more often in lichen planus than we do in syphilis, probably because the patients are not usually instructed to continue with their treatment after the disappearance of the eruption. Again in syphilis, the specific eruption is not infrequently preceded by urticaria and other types of the erythema group, showing that the organism causing the disease is disturbing the economy. The following case is apropos in its striking analogy: Case V. Miss A. W., aged 50. Diagnosis, lichen planus. The patient had had attacks of eruptions on the skin, off and on, for years, which had been diagnosed as eczema. At the present time she appears with a pruritus of the legs, accom-

panied by slight redness and swelling; the swelling was so great that the tops of the shoes could not be laced. Behind the knees there was a great deal of pruritis, but no eruption is to be seen there. She was given various lotions and rest, which did not relieve the itching. The patient felt ill, had no appetite, was extremely nervous, and complained of a constant headache. Four days after her first visit she appeared with a well-marked erythema multiforme of the legs and forearms, which continued for one week, during which time the patient, feeling very weak and miserable, was put to bed and kept there for ten days. She became weaker, lost weight rapidly, was sleepless and intensely nervous. One month and twelve days after her first visit, an eruption of small red acuminate papules appeared on the chest and the flexor side of the forearms. A fortnight after the disappearance of the erythema, some of the red acuminate papules gradually evolved themselves into the typical plane papules of lichen planus, at last giving us a diagnosis in explanation of the patient's condition. She was immediately placed on protoiodide of mercury, which was followed by the rapid subsidence of all symptoms. Three weeks after the diagnosis was made, the patient was virtually well. She had regained flesh, color, appetite and her nervous tone was restored. The edema of the legs had also promptly disappeared. This patient remained away without treatment for two months, when she again appeared feeling tired and in a somewhat similar condition in which she had been before her former attack. She was again placed upon protoiodide, and was promptly relieved of all symptoms. This case is cited to suggest that the erythematous eruption is similar to the rash that often precedes acute specific infections.

The lesion of lichen planus is almost a type of granuloma. The small mononuclear cells, characteristic of the disease, whatever they may be, first form in the lymph spaces around the papillary vessels. The toxic influence, whatever it is, does not produce a plasma cell, as in syphilis, but cells of a somewhat similar type, which rapidly increase until the upper portion of the derma becomes edematous and succulent. The fluid in the derma is forced into the epidermis through the intercellular channels, thus enlarging these spaces and breaking many of the prickles. As in all other processes, in which the epidermis is bathed by fluid and rests upon a soft succulent derma, acanthosis results. Through the proliferation of the prickle cells of the epidermis, the thickening and dipping down of the inter-papillary rete pegs, the rapid increase of the cellular elements of the derma, and the typical lichen planus cells, we have the formation of a papule. This papule may result in the restitution of the tissue to its normal condition, leaving slight or marked pigmentation; or, involution of its central portion may occur, with a peripheral extension, forming the so-called circinate lesion of the disease; or, the papule may become absorbed, leaving in its place scar tissue, the so-called atrophic type of the disease.

The epidermis covering the papule may become markedly active and thickened, forming the hypertrophic papule, the *lichen corné* of Vidal. If there is an afflux of serum from the vessels, accompanied by vascular irritability, bullæ may readily form on some lesions. The lichen papule, according to the peculiarities of the individual, the location and the reaction of the individual's tissues to the toxin, may be acuminate, plane or obtuse in their forms, these being dependent upon the extent of the cite involved. In the syphilis papule, the essential feature of the lesion is the formation of plasma cells about the vessels, which we now know is due to the pale spirocheta. This papule may be of various sizes and types. It may undergo central involution and form a ring; it may extend proliferally; the papules usually occur in close proximity to one another and form a group; and again, the papule may become absorbed, leaving the skin of the individual in its normal condition. The epidermis over the papule may become acanthotic and vesicular, if there is much effusion from the vessels, causing the so-called seborrhoic papule. The syphilitic papules may occur in streaks or patches in the mouth, very analogous to the lesions of lichen planus of the mucous membrane. The initial lesion of syphilis precedes the eruption for some weeks, and is somewhat analogous in certain instances to an initial lesion in lichen planus, that sometimes precedes the general eruption for months.

The evidence given above suggests, that lichen planus is due to some constitutional disturbances which might be caused by some infectious microbic agent. It has occurred to many that lichen planus was an infectious disease, although Brocq says that the microbic nature of lichen planus has been almost universally abandoned. He cites the bacillus described by Lassar as a possible etiological factor that has not been confirmed. Numerous observers have reported the occurrence of two or more cases in one family. Jadassohn, Keyes, Hamacker, Lustgarten, Ledermann, Heidengsfeld, are cited by Brocq. Beltmann, in the discussion of the etiology of lichen planus, believes that the glandular enlargements, enlargement of the spleen, involvement of the mucous membrane, the clinical history, together with the constitutional symptoms, point to an infectious origin of the disease. He reports a brother and sister both affected, while in another case a brother was said to have a similar affection, which he also values as of etiological importance. Hallopeau and Lemierre report two cases of lichen planus exclusively on cicatrix, and think that the infectious agent usually enters through the glandular orifices of the skin; but in these particular instances, the cicatrix offered culture media for the development of the disease. Hallopeau makes a similar remark in a report of a case of lichen planus occurring with impetigo. Morel-Lavaillée reports cases of lichen planus occurring in husband and wife. In the discussion of these cases, Sabouraud remarks that he had never observed an example of contagion in lichen planus. Hallopeau, in reporting the evolution of the circinate

lichen planus lesion from an initial plaque, thinks that such a process points to its parasiticity and to the analogy between lichen planus and pityriasis-rosea, mycosis-fungoides, as it presents an initial incubation period from an initial lesion. Brocq, in discussing this case of Hallopeau remarks that lichen planus is the reaction of the skin suffering under the influence of some irritation, as similarly ascribed by Jacquet (one of the first to suggest its nervous origin), or, to some parasitic influence. Hallopeau, replying to this discussion, said that the disposition which one observes in lichen planus, as in syphilis, to the formation of corymbose lesions, is a point in favor of the parasitic origin of the disease. (Danlos also reports the formation of corymbose lichen planus.) Omerod, in a discussion of lichen planus, observed that he had a patient affected with lichen planus who stated that his mother and sister were affected with the same disease.

The following cases, four very striking ones, have come under our observation. *Case VI.* (See Fig. 1) Mrs. D. N., aged 30, came to the St. Louis Skin and Cancer Hospital for treatment on March 21st, 1907, service of Dr. Keber, by whose courtesy we have the privilege of reporting this case. Diagnosis, hypertrophic lichen planus. The woman had had the disease for two months. Left hand, thumb and forearm were involved. The lesions consisted of small plane papules, arranged in lines, and coalesced in places to form a patch, with a few discrete outlying papules. The patient stated that she had had the same trouble and lesions twelve years ago, when it was more extensive. She was put upon mercury internally, and on the 20th of May was dismissed, cured. She returned on the 5th of August with relapse on index finger and thumb. *Case VII.* (See Fig. 2) R. N., boy, aged 2 years. Diagnosis, lichen planus. Was brought to the St. Louis Skin and Cancer Hospital by his mother (*Case VI.*) April 13, 1908. The eruption began ten days ago on the right side of the buttocks in the form of large patches. The lesions are typical of those of lichen planus, being of the small plane type, and are scattered in small patches over the entire body. The eruption has a tendency to group, and consists of flat top umbilicated, plane papules. The mother was exceedingly worried about the child, and readily recognized that he had the same disease as herself, and suggested the possibility of her having infected the child, as she was nursing it when she was suffering from the same affection, three months previously. The eruption in the child readily subsided under inunctions of mercurial ointment. *Case VIII.* Mrs. H., aged 37, appeared for treatment April 11th, 1907, private case. Diagnosis, hypertrophic lichen planus. The patient had lichen planus about ten years ago, when it remained three or four years and disappeared. Three years ago it broke out in numerous places on the arms and legs. First attack followed shock from cyclone, as mentioned in an early part of this report. The case proved an exceedingly stubborn one and did not recover until the following November. She remained free from it for several months



Case VI. Fig. 1. Hypertrophic lichen planus.



Case VII. Fig. 2. Lichen planus.

and then suffered a relapse. *Case IX.* (Private.) Miss H. (daughter of Case VIII.), aged 16, appeared for treatment February 10, 1909. Diagnosis, acute lichen planus. In October the patient received a burn from lye on the left wrist. There was no formation of bullæ, but the skin became red and thickened. The burn did not heal and after a few weeks small, shiny "lumps" (papules) appeared on its surface. About a month ago these began to spread around the burnt patch, involving the arm and hand; similar lesions appeared on the other arm, back of the neck and ankles. The lesions then began to itch. At her visit, the area mentioned, namely, both forearms and hand, was dotted by typical lichen planus lesions, the principle ones of which were scattered over forearms, at the site of the burn, and here and there over the arm were several linear arrangements of papules, which the patient stated were sites of former pin scratches. In the mouth, upon the cheeks and tongue, were numerous lesions in groups, forming the white patches usually seen in that location in this disease.

For experimentation, two scratch marks were made on the unaffected skin of the left forearm, one scratch being made as a control with a sterile needle; the other was inoculated with serum from a scraped papule. When she returned one week later both scratch marks had developed typical lichen planus lesions, which had evolved under active mercurial treatment, while the older ones showed constant improvement.

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TUMOR OF THE CEREBELLUM.

By M. A. BLISS, M. D., and N. B. CARSON, M. D., of St. Louis.

F. E. B., aged 15, white, male. Father and mother living and healthy. Several brothers and sisters living and healthy. No hereditary tendency to malignancy or tuberculosis.

He has not been well for two years. He would frequently come home from school complaining of headache. He could not play as other boys did, for he would get headache and everything would turn dark before him. He called these "blind spells." Last October he began to stagger in his gait, especially during his attacks of headache, and sometimes he would fall on his way home from school.

At this time he began to be nauseated, and occasionally he would vomit during the attacks of headache. Later he would sometimes vomit rather suddenly without preceding nausea. Mentally he was about as usual. He slept well and had a good appetite.

Present condition: Examined first, February 7, 1908. He staggers in his gait and walks with his feet wide apart and with constant contractions of the muscles of the feet and legs. His walk is of the "drunken" type. Repeated trials convinced us that he staggered more to the right than to the left. He has never fallen backward. His station is poor but not made worse by closure of the eyes. He is not ataxic in his upper extremities. Quick movements of the fingers can be maintained. He has no marked tremor. His strength is equal on the two sides. There are no sensory changes. His knee jerks are low but equal. There is no ankle clonus. The plantar reflexes are normal in direction. The cremasteric and abdominal reflexes are present and equal on the two sides.

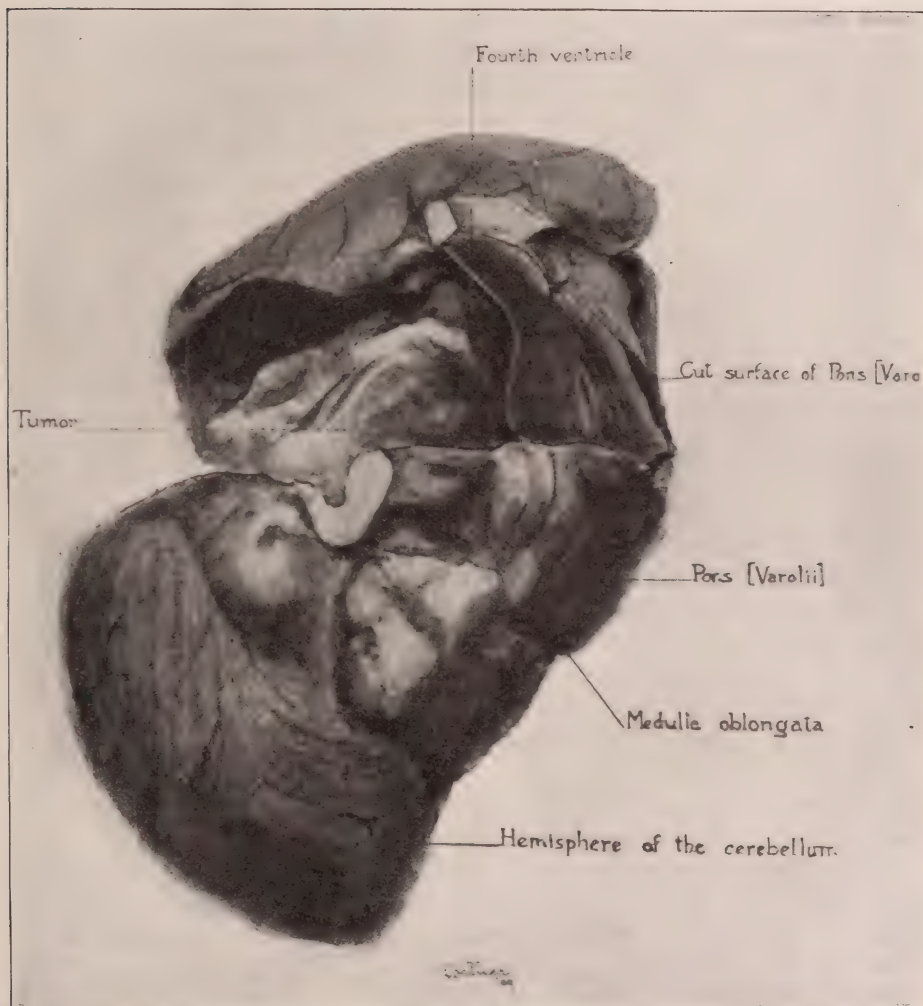
His pupils are dilated, the right more than the left. Both are sluggish in their response to light and accommodation, the right probably more than the left. Both pupils regain some of the dilatation in the presence of the same light. There is no paralysis of any of the extrinsic muscles of either eyeball. No ptosis. The eyes are closed readily and tightly on command. There is a swelling of the discs of two and one-half diopters in both eyes. The veins are engorged. There is edema. The fields are normal. Vision is good. Nystagmus is present constantly. It is not more when the eyes are moved in one direction than in the other, and is horizontal.

The facial innervation on the two sides is equal. He has a marked "cracked pot" sound, especially at the frontoparietal suture. Some

*Reported to the St. Louis Neurological Society.

separation of the sutures can be made out and the head gives some impression of a hydrocephalic shape.

During the two weeks following the time the above notes were made the patient was examined nearly every day, but his symptoms changed but very little. At first it was thought that he had deficient hearing on the right side and he complained of a tinnitus in the right ear which



Tumor of the Cerebellum.

he said was growing worse. But clearing out a mass of cerumen and dirt caused a disappearance of symptoms.

The boy had scabies and head lice when he came to the hospital and it took some days to get him cleaned up.

At times he complained of double vision but it was transitory and it was not possible to establish essential weakness of any of the ocular

muscles. He also at times seemed to have an inequality in innervation in his face. The left side seemed weaker in response to voluntary effort but stronger in emotional movement. But this varied and could not be always demonstrated. The inner canthus of the right eye seemed wider than the left and the right eye at time more prominent, but this also varied.

The sutures widened perceptibly while he was under observation and this natural decompression no doubt explained why he suffered very little with headache and why his discs did not swell more. In fact his discs were swollen less ten days after the first examination.

On February 24th an attempt was made to attack the growth. A cross-bow incision was made and the bone laid bare. Bleeding was very profuse; the patient got into a faulty position on the table which was interfering with his breathing, but which was attributed to the anesthetic. His pulse became rapid and his blood pressure fell rapidly. No attack was made on the bone. The scalp wound was closed and the patient returned to bed. He reacted well and during the afternoon and night and the next day was in good condition, with normal pulse and respiration. Thirty-six hours after the attempt was made, the patient rather suddenly began to breathe very slowly. Under camphor injections and artificial respiration he revived somewhat, but within half an hour ceased to breathe.

Autopsy was limited by the family to an examination of the cerebellum. When the larger part of the occipital bone was removed the dura did not bulge, but as soon as the dura was removed the tumor mass could be distinctly felt in the right cerebellar lobe and seemed to extend into the middle lobe. On removal of the ring of the foramen magnum the medulla bulged and was seen to be compressed against the margin of the foramen. The cerebellum was removed with some difficulty and squeezing it in removal caused some of the softened portion of the tumor to exude.

An incision was made through the cerebrum into the lateral ventricles, which were found to be greatly dilated.

After the specimen was hardened in formalin, examination disclosed a portion of the tumor, as large as a hickory nut, protruding on the left side of the medulla. Another portion projected between the upper surface of the medulla and the worm, and at first was difficult to distinguish from the substance of the medulla.

The medulla at autopsy was sectioned transversely at a level with the lower part of the olive, and the part of the tumor which protruded extended almost to this point.

The medulla was expanded laterally. A leaf-like process with torn edges projected from the ventral surface of the medulla partially covering the left olive. The left olive was about half as long as the right.

An incision was made from before backward dividing the worm, pons, and medulla, and this exposed a tumor mass as large as a tamarind, hav-

ing its primary attachment apparently from the roof of the fourth ventricle and resting on its floor.

The cavity of the fourth ventricle was immensely dilated and entirely filled with tumor tissue. The medulla was much thinned by its encroachment as was the worm. Both lateral lobes were extensively excavated and their walls greatly thinned.

The tumor was so soft in parts as to flow on section. It was in parts pinkish and in parts light gray. It proved to be a glioma.

MEDICAL AND SURGICAL PROGRESS.

TUBERCULOSIS OF THE BONES AND JOINTS.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

1. TUBERCULOSIS OF THE JOINTS.—K. Vogel (*Deut. Zeit. für Chir.*, Leipzig, December, '08, XCVII., No. 1-2).
2. THE OPERATIVE TREATMENT OF PARAPLEGIA WITH TUBERCULOUS SPONDYLITIS.—Wassiliew (*Archiv. für Chir.*, Berlin, LXXXVIII, No. 3).
3. SURGICAL TREATMENT OF TUBERCULOUS AFFECTIONS OF THE HIP JOINTS.—König (*Berliner klin. Woch.*, March 8, '09, XLVI, No. 10, 429).
4. THE TREATMENT OF HIP DISEASE IN ITS EARLY STAGE.—Lannelongue (*Deut. med. Woch.*, 1908, No. 8, p. 359).
5. TUBERCULOSIS OF THE BONES AND JOINTS.—William W. Cadbury (Fourth Annual Report, Phipps Institute).
6. TREATMENT OF TUBERCULOUS HIP DISEASE BY WEIGHT-BEARING AND FIXATION BY THE LORENZ HIP SPICA.—H. Augustus Wilson (*Surg. Sec. International Cong. on Tuberculosis*, Wash., D. C. Sept. 30, '08).
7. TRACTION IN THE TREATMENT OF HIP DISEASE.—Bradford and Soutter (*Amer. Jour. Med. Science*, December, 1908).
8. THE MODERN TREATMENT OF TUBERCULOSIS OF THE SPINE.—Lovett (*Clev. Med. Jour.*, Feb. 1909).
9. THE TREATMENT OF JOINT TUBERCULOSIS.—Ochsner (*Illinois Med. Jour.*, July, 1908).

The surgical treatment of tuberculous bone and joint lesions has long been a field of endeavor which has been turned up by innovations and suggestions of radical changes in methods. The treatment of these affections is, generally speaking, under two heads, namely: operative measures, where an attempt is made to excise the tuberculous focus; and non-operative measures, where conservative protective apparatus is used, with the end in view of aiding the organism in resisting the infection and finally getting the better of the tuberculous process. To illustrate this may be cited the treatment of Pott's disease by recumbency. This was advised by Perceval Pott, and has been recognized since his day as a valuable therapeutic agent. It has its limitations, however, in that this class of cases do poorly as a rule when confined to bed in the house. Substitutes for recumbency have been devised in the shape of ambulatory apparatus, consisting of corsets, braces and

plaster-of-Paris casts. Hip disease in like manner has been treated by recumbency, by braces, appliances and casts, and the evolution of the ambulatory treatment of hip disease is a subject of considerable interest. Not, however, until the days of aseptic surgery did it become possible to consider operations designed to remove the tuberculous focus entire. Previously amputation of diseased extremities had been much in vogue, but Koch's discovery of the tubercle bacillus and Röntgen's discovery of the x-ray have placed in the hands of surgeons data which have encouraged them to attempt methods better designed to overcome these conditions without loss of limb. Increased knowledge on physiology and on the important rôle played by the leukocytes in the absorption and conquering of disease processes has brought still further innovation into this realm of therapeutics. The passive hyperemia of Bier has come as a useful therapeutic agent, and its value in these cases is all but established. The constant change and the constant influx of new ideas and new methods makes the treatment of the tuberculous bone focus a subject of increasing interest; nor is the end as yet reached.

In considering an individual case of hip disease, or Pott's disease, of tumor albus, or of a tuberculous bone or joint wherever found, the question must be decided as to what method of treatment will give the best results, and will give these results in the least space of time. Recourse to radical operation may be had. On the other hand the patient may be put completely at rest and the joint protected. Between these two extremes we have the middle-ground of ambulatory treatment. Each of these methods has its devoted adherents, and there is forthcoming a constant series of reports and articles which illustrate the success attained by the employment of any one of them, or all of them. In order to determine what is a good result, it is necessary that a considerable period of time elapse, as immediate success is not possible of attainment in the treatment of these cases. Some faith, however, at the present time, may be placed in the reports of ultimate results that appear from time to time, as these cases have been under careful observation for a long enough period to be adjudged approximately ultimate. As to the various methods of treatment, there is perhaps no field of specialized surgery that allows greater latitude and offers a stronger appeal to the surgeon's judgment and resources, and in which he will find greater satisfaction in not sticking to preconceived ideas or hide bound rules, than does the treatment of tuberculous bone and joint lesions.

Koenig, for instance, has looked over the present condition of 568 cases of hip disease, finding that 294 of these needed operative interference and that 202 of these 294 showed the following results: 55 had died of other diseases, 114 had got well and required no apparatus to aid them in locomotion, 33 had regained normal joint function and 90 had more or less movable joints. Thirty-five patients still required a cane or crutch, and in 3 the condition was bad while 13 still had discharging sinuses. So much for the non-operative cases. In 274 where resection had been done, 60 patients could not be located. Of the remaining 214, 66 were well, and 16 of these 66 were able to engage in all the pursuits and sports of life. Apparatus was necessary in 43 cases and 34 still had sinuses. Koenig has done hip resection in 104 cases, making an attempt to remove every trace of diseased tissue. He claims a much more thorough technic of resection than is ordinarily employed, and points out the fact that inasmuch as only the severer cases have been

given operative treatment, his research into the ultimate results show very favorable conditions following a radical operation.

Wassilieu also reports six cases operated upon for paraplegia, occurring as a result of Pott's disease. He did what is known as Menard's "Costotransversectomy," an operation which is better designed to reach the disease than is laminectomy. He operated as soon as paraplegia developed and did not employ conservative methods at all. Of his six patients, four were cured.

Vogel, on the other hand, reports 349 cases of tuberculosis of the shoulder, elbow, wrist, hip, knee and ankle treated by Bier's constriction hyperemia. He points out that it takes great care on the physician's part to treat these cases properly by this conservative method, and gives minute instruction as to the application of the constriction. He uses a simple rubber band, two or three inches wide, applying it one hour morning and evening, the limb being placed in a comfortable position with all other constrictions removed, and states that in every case of elbow and wrist tuberculosis the cure was complete with this treatment. It seems that this method of treatment is much more advantageously applied to diseases of the extremities than where either the hip or the spine is involved.

Lannelongue calls attention to the good results in the treatment of hip diseases by recumbency, plaster-of-Paris spicas and injections to the joints after the manner recommended by Calot. He is inclined to believe that Calot's good results are due more to conservative methods than to joint injections.

Wilson who has taken up the recommendation of Lorenz, which briefly stated is to the following effect: That nobody has a right to place a child with hip disease in bed, for almost invariably its health will fail. What should be done is to advocate weight-bearing with a short plaster-of-Paris spica to encourage what is called "nature's cure." The patients walk about without the use of crutches and activity is encouraged. This is a very radical departure from previously advocated principles and has this to recommend it: Weight-bearing is conducive to the benefit attained by an outdoor life and in turn prevents circulatory stasis, thereby securing the benefits obtained by the hyperemic method of Bier. The objection that pathological dislocation is thus encouraged does not hold, as this condition is the result of muscular action and has occurred with greater frequency in other methods of treatment.

Adams has found that ambulatory cases of tuberculous joints do better than those confined and inactive. The importance of sunlight, fresh air and activity is essential; milk and egg diet is quite as important. In addition to these, the limb should be placed in 20 degrees flexion, 20 degrees abduction and 50 degrees external rotation. In this position the plaster-of-Paris is applied and the child is allowed to be up and about. The course of treatment is decidedly shortened and there is prevention of the occurrence of ankylosis in an unfavorable posture. Weight-bearing does not cause bone destruction; the method is applicable to incipient cases and to old cases with discharging sinuses, and has been followed by good results in 60 patients under Wilson's observation.

Bradford and Soutter, in a paper on traction in hip disease, analyze the various forms of treatment of an ambulatory and recumbent nature, and report the results of 1,809 cases treated at the Boston Children's Hospital. Of these, 30 per cent. were suppurative cases. The operations

other than incisions of abscesses performed were as follows: Amputation at the hip joint, 2; 1 surviving twenty years later and 1 death; excision, 64; 9 deaths, arthrotomies, curetting of the femoral head and neck, channelling of the neck, and 4 cases of dislocation of the head, 606 cases, 25 deaths. The causes of death were 12 tuberculous meningitis, 1 empyema, 1 double hip disease, 1 hip disease and Pott's disease, 1 scarlet fever, 1 diphtheria, 1 after abdominal incision, and 1 from uncomplicated hip disease. The results of the observation of these 1,809 cases after a sufficiently long time to draw conclusions was that there was ultimate mortality of 6 per cent., the cases under treatment at the hospital showing a mortality of 4 per cent. The percentage of abscesses was 30 per cent., ultimate results showed useful limbs in 98 per cent., shortening of less than two inches in 70 per cent., motion of 90 degrees or over in 40 per cent., absence of flexion deformity in 60 per cent. and absence of pathological dislocation in 70 per cent. These statistics being drawn from the out-patient of a large children's hospital and not being taken from a selected group of private cases whose treatment is under the most favorable circumstances, makes them statistics of especial value. The authors conclude that better results in hip disease are gained by the principles of traction than by any other method, even if it is more or less imperfectly applied. Experience has justified the expectation of a perfect recovery after thorough treatment. They compare the results obtained by other methods of treatment much to the advantage of treatment by traction and partial fixation.

In the Fourth Annual Report of Henry Phipps Institute, Cadbury states that of the 3,733 cases that appeared at that Institute for treatment, only 55 or 1.47 per cent. gave a history of bone or joint tuberculosis, and 12 of these 55 were not absolutely positive. Two cases had tuberculosis of the sternum and ribs, from direct extension of the tuberculous process in the lungs. In only 4 of the 55 cases was pulmonary tuberculosis not demonstrable. In 32 there was pulmonary disease in an early stage. The bone disease was the predecessor of pulmonary lesion in 30 cases, and in the rest the pulmonary disease seemed to have been the primary seat. Of the 55 cases, 22 were spine disease, 14 cases were hip joint disease, 7 knee joint disease, 4 in the femur, 2 in the elbow, 2 in the jaw, 2 in the bones of the forearm, and so on. A detailed report of each case follows. The interesting part about this report is that in so many cases of pulmonary tuberculosis, and tuberculosis elsewhere, there should be only 1.47 per cent. of bone and joint involvement.

Lovett runs over the treatment of Pott's disease and compares recumbency with ambulatory methods, stating that he believes the mechanical conditions prevailing in ambulatory treatment are obviously far less favorable than those in recumbency. If ambulatory treatment must be used, it is best borne by cervical and lumbar cases, and least well by cases with disease in the dorsal region. Plaster jackets are more efficient than braces when ambulatory treatment of the acute stage must be followed; and in the convalescent stage, braces are preferable to jackets. Treatment by recumbency is a necessity in all cases when disease becomes painful, when abscesses are threatened or present, or psoas contraction takes place; also in cases of paralysis, and when the general health fails. Psoas abscesses treated by recumbency and traction on the affected limb until it is evident that absorption will not occur. The mortality in 49 cases operated upon was 25 per cent., in cases not over five years of age, and 50 per cent. in cases operated

upon between five and ten years. Outdoor life, day and night, is essential to stimulate the process of repair. The author believes that recumbency fulfills the mechanical demands by wholly removing superincumbent weight, making fixation easy and not constricting the chest. Braces and plaster will aid the efficacy of treatment by recumbency. This paper presents a forcible appeal for conservative methods in the treatment of Pott's disease.

To Ochsner the treatment of bone and joint tuberculosis is quite an optimistic affair. He strongly advocates the use of tuberculin injections, using the opsonic index as a control. Also advises Beck's bismuth paste. He believes in using plaster-of-Paris to fix the joints, and recommends immobilization in a position of equilibrium. He presents rather too favorable a view of bone and joint tuberculosis, in saying that these affections if thus approached become most satisfactorily and easily managed.)

From the foregoing references to some of the literature that has recently appeared, the conclusion may readily be reached that the treatment of bone and joint tuberculosis is still undergoing most radical changes, and that to those who see this class of disease, there often arises a necessity for a serious deliberation as to the best method or combination of methods to be employed.

SOME LATE WORK ON TUBERCULOSIS.

A REVIEW OF RECENT LITERATURE.

By CARL FISCH, M. D.

1. ABOUT THE FREQUENCY OF TUBERCULOSIS IN INFANTS.—Paul Sehlbach (*Münch. med. Wochenschr.*, 1908, No. 7, p. 322).
2. ABOUT THE FREQUENCY OF TUBERCULOUS CHANGES IN THE AUTOPSY MATERIAL OF THE PATHOLOGIC INSTITUTE OF BERLIN.—H. Beitzke (*Berl. klin. Wochenschr.*, 1909, No. 9, p. 388).
3. THE PRESENCE OF TUBERCLE BACILLI IN THE CIRCULATING BLOOD IN TUBERCULOSIS.—Randl C. Rosenberger (*The Amer. Journ. of Med. Sc.*, 1909, No. 443, Feb. 2).
4. ABOUT THE FREQUENCY OF TUBERCULOUS CHANGES IN AUTOPSY MATERIAL.—A. Necker (*Verhandlungen der deutsch. patholog. Gesellschaft*, Vol. 8, p. 118).
5. ANTIBACTERIAL AND ANTITOXIC IMMUNIZATION IN TUBERCULIN TREATMENT.—E. L. Trudeau (*Journ. A. M. A.*, 1909, Jan. 23).

A review of the late literature on tuberculosis would be impossible on account of its voluminous character. It must be limited here to a few publications accessible to exact and practically controllable considerations that bear on important features of the tuberculosis question. Recent general literature on tuberculosis is extensive, and if we consider its bearing on the problem of the biologic character of the disease, we are compelled to admit that most of it is inaccessible to direct proof by experience or experiment. To this belong mainly the publications dealing with the results of animal experimentation. As valuable as they are, they should not be classed with the factors obtaining in human tuberculosis under ordinary conditions of life; an objection that also holds for the conclusions drawn from the animals treated under conditions never present in the ordinary course of their life. As far as human tuberculosis is concerned, the review of discussions made at the last Congress on Tuberculosis, at Washington, are a clear proof of the lack of definite and established facts, explaining the nature of these conditions.

That conditions must exist which allow tuberculous disease, is an old tenet. We know positively that no human being is entirely immune against the entrance into his system of the virus, and deals with it merely as a harmless foreign body, easily eliminated. However, Naegeli's extensive investigations first established that when an entrance has taken place, almost invariably tuberculous changes occur. His findings in many hundreds of autopsies showed in almost all of them the proof of a former or present tuberculous process that had never caused serious disturbances during life. In his record, deaths from tuberculosis are included but they are the smallest minority of the total. Other investigations have followed Naegeli's, more or less confirming his results. Of course, the character of the material used or the methods employed,

the critical capacity of the observer and many other factors influence such statistics, but the general conclusion to be drawn from all of the material published on the subject, including the latest, published by Beitzke and Mecker, point to the fact that only rarely a human being escapes a tuberculous infection. This proves with considerable weight the great resistance of the human being to the toxic effects of the tubercle bacillus. The mortality is small in comparison to the morbidity, nevertheless the mortality is such that it decimates the population of the world. The study of the causes of this, and the practical consequences of this study, have led to an amount of work and enthusiasm that never has been seen before. In spite of this, the principal questions in the exact interpretation of the process of human tuberculosis are not yet fully answered. With our modern knowledge of dealing with other infectious diseases, the tuberculous process will finally find its solution in identical or analogous relations. The most opposite opinions about origin, manner of entrance and transmission, are entertained to-day; therefore, an active attack against this infection is impossible. The origin is, of course, indicated by the presence of receptive tissues and by the tubercle bacillus. The receptivity of the tissues varies greatly, according to the histologic type or according to the age. The latter plays the most important part in the problem. The younger the tissue, the greater is the influence on it of the tubercle bacilli, so that in infants the infection in almost all cases leads to a fatal end in a short time. Sehlbach in his paper on the records of 1,390 autopsies made on infants and children up to nine years, found tuberculous lesions in 180 cases. Among these there were 1,150 infants in their first year, and in these the percentage amounted to 7.8. Others, like Stirnimann and Binswanger, have found almost identical figures. Hamburger, in a series of cases which were decidedly pathologic in other respects, found 15.4 per cent, with no extension of the tuberculous process to lead to death. Very interesting is the distribution of tuberculosis in infants in the second quarter of the first year of life. It is low in the first quarter, high in the second and third, and lower in the fourth quarter. In the second year the curve rises suddenly, then subsides considerably, and with the third and following years remains almost steadily at 50 per cent. Sehlbach bases on this observation the opinion that infantile tuberculosis in the first year is either due to infection by the mother or by the food; or, after the first year, to infection by other external sources, in consequence of contact with infected material of soil and objects, with which the babies in their movements come in contact. Although the tuberculosis of infants sometimes shows the result of resistance against infection by localized lesions or by encapsulation, the resistance ordinarily is very low and infantile infection leads always to early death. That only a small percentage of infected children carry the disease without symptoms to a later age, where it becomes active has been established by these observations, although they are relatively small in numbers. The importance of these observations is due to the fact that they were made under the same conditions during ten years in a population always the same. This fact would speak against Behring's theory that infantile and children's tuberculosis may heal, but that the infection leaves hypersensibility of the system that makes it a receptive subject of later introduced tuberculous virus. The theory that predisposition for tuberculous infection must be caused either by a juvenile healed or latent tuberculous process, is based on no facts.

The question of the location of the primary lesion of pulmonary tuberculosis has not been definitely answered. Again, the intestinal or other indirect introduction of the virus begins to be predominant, although the careful experiments of Pfeiffer have, at least in the case of one animal, established the ease with which primary tuberculous lesions of the lungs can be produced by the inhalation of a relatively small number of bacilli. His experiments, too, have shown that for infection by the intestinal tract, a thousand times the number of that for pulmonary tuberculosis is necessary. The positive results from the use of numbers, millions of times greater than that necessary for infection by inhalation, cannot be referred to as evidence for the intestinal origin, as such conditions never obtain in the life of animal and man.

An important addition to our means of deciding this question is Rosenberger's contribution on the presence of tubercle bacilli in the circulating blood. Tubercle bacilli had been found before by several observers, suggesting that, as a rule, they were always present in the blood in certain stages of the disease. Miliary tuberculosis also was apparently proved to be of this origin, although histologically its formation in that way cannot be accepted after Orth's publication. The importance of Rosenberger's work lies in different directions. The first is the ease of making a diagnosis of a tuberculous infection in conditions where the process is obscure and only indirectly suspected. Although we have, at the present time, sufficient other means to clinch the diagnosis with a high degree of certainty, the use of which is unfortunately very slow in becoming routine in medical practice, the method of the author will likewise be a means to demonstrate by finding tubercle bacilli in the blood in every one of all forms of tuberculous disease, instead of the search for the tubercle bacilli elsewhere. The method is very simple and its difficulty lies only in the possibility of obtaining the necessary quantity of blood. Very often one cc. is sufficient; sometimes as much as five cc. are needed. The blood is mixed with an equal amount of two per cent aqueous sodium citrate solution and allowed to precipitate for twenty-four hours. The sediment is then spread in thick layers on slides, and dried eventually by higher temperature (incubator). The slides are immersed afterwards in distilled water, to be changed several times, until all of the hemoglobin is removed and the red cells are disintegrated. After drying the slide is covered with a thin transparent film that can be treated like all so-called smear specimens. They are fixed by heat or alcohol and stained in the ordinary way for tubercle bacilli. The counterstain with methylene blue is of great importance, as the nuclei of the blood leucocytes are preserved and give a beautiful guide in focussing the fields. Without it the search for tubercle bacilli is very difficult as nothing is stained but the bacilli, and eventually other bacteria in mixed infection. This, however, is very rare. This simple method is applicable in every case of tuberculosis, no matter whether glandular, osseous or pulmonary; no matter whether the lesions are active or dormant, tubercle bacilli are always found. The reviewer has had a chance in nine cases to make use of the author's procedure; five of these were open pulmonary tuberculosis, the other four were, one of the cervical glands, and three of so-far closed pulmonary infection. In all cases the result was positive, and was especially marked in the cases of cervical glands and closed pulmonary lesions. The skin test and clinical condition of the patients had made this procedure unnecessary, but it served as welcome additional information. It alone, of course, would have been conclusive.

The direction in which this new knowledge will influence our conception of the manner of entrance of tubercle bacilli, and of their primary location in one or the other organs or tissues, is difficult to find. We know that presence of pathogenic bacteria in the circulation obtains, at times, in all infectious diseases. The meaning of this is not clear. To call it an infection of the blood is not justifiable. Even in the so-called septicemia the bacteria circulating in the blood are only evidence of disseminated infection by the organism. In this way they may, in septicemia, be a factor of bad prognosis. That the same presence of bacteria is found in infectious processes of entirely mild character and is made a means of diagnosis in obscure and doubtful cases, proves that it means nothing as to the gravity of the infection. The bacilli are found in the mildest cases of typhoid with no characteristic clinical conditions, thus showing that their presence in the blood leads neither to aggravation of the symptoms nor to independent pathologic conditions. The staphylococci of a cutaneous abscess may often be demonstrated in the blood without their causing other lesions. The focus of infection must be predisposed to harbor them. This obtains also in lesions of the valvular apparatus of the heart caused by bacteria. Endocarditis of an infectious character is always the consequence of a lowered resistance, caused, perhaps, by the general intoxication of the tissues by any infection. Thus the presence of tubercle bacilli in the blood is not unexpected, and shows moreover that, just as in other infections, it carries no meaning as to the character of the infection. It is simply of diagnostic value. The presence of tubercle bacilli in the blood, not in so-called "initial" tuberculosis of long standing, but in early location of the bacilli somewhere in the body, shows that only at the point of entrance do they find, in the infected organism, a favorable pabulum to multiply. That a small area of involved tissue can be the source of their presence in the blood, is certain; and, moreover, this is shown in other infectious processes that remain always localized.

The late resurrection of Koch's discovery of tuberculin, and its use for therapeutic purposes has so far not resulted in conclusive or positive experiences, although this does not mean that its influence on the infection is altogether negative. Trudeau's paper on the subject gives very valuable directions as to the individualization of its application resulting from his long and wide experience. That tuberculin contains substances, specifically reacting on products of tuberculous tissue, has been demonstrated by Wassermann, in his investigations on the antibodies. In spite of many contradictions made by others, following his methods, there is no doubt that in tuberculous infection processes of interreaction between the virus or its products and the tissue cells exist, homologous to those firmly established for other infectious processes. The later publications indicate that Wassermann has placed tuberculosis in the series of other infections which by further study will be accessible to specific products. Although Trudeau, in his final conclusions, is rather doubtful whether tuberculin treatment is of great value, he hesitates to deny its importance if used when there are definite indications. It is only a question of time, in the opinion of all, when the further study of this substance will lead to uniform ideas. And with our present way of dealing with the problem of eliminating tuberculosis, we ought more and more to be convinced that our ways of procedure are ineffective. In Germany, great disappointment with the results is becoming general. The compulsory improvements by Park, of New York, cannot be cited as an example for general application. Our pop-

ulation consists of all sorts of people, some of whom are mentally incapable of understanding logically measures of a protective nature. They will always consider them as an infringement on their liberty and therefore disobey them. It will be impossible, for many ages, to raise these people to the level of education enabling them to understand these measures and make them their own. Protection against infection can only be obtained by methods that prevent the possibility of infection—that is, to suspect tuberculosis in all obscure disturbances which cannot be explained, and to proceed against the tubercle bacilli before the microscope gives the clinching proof. Attempts at diagnosing tuberculosis early, are made to-day, but only in cases where distinct clinical symptoms exist, in other words, where the process is not initial any longer, but has already influenced the constitutional integrity. We have the means to-day to discover, with almost absolute reliability, the earliest periods of tuberculous infection. We know by experience that such a method will result not only in stopping the progress of the invasion, but also will prevent the appearance of destructive processes leading by the communication with the air passages to the infection of other persons of the community. If the diagnosis of tuberculosis would be based generally on the proof only of the existence of an infectious process of a tuberculous character, and not on its activity and its involvement of life-important organs, we would be able to eliminate tuberculosis in a limited number of years. The present methods of dealing with tuberculosis are inefficient, and take up only problems involving the results of the disease when it is fully established. We can prevent this hopeless state by an early positive diagnosis, in conditions where other explanations are impossible; and by excluding other conditions the way should be led to an investigation of a condition that is tuberculous. The modern sanatorium, and the lay assemblages so active now in the fight against tuberculosis, would disappear in fifty years for want of patients with open tuberculosis.

CUTANEOUS REACTIONS TO TUBERCULIN IN CHILDHOOD.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

1. COMPARISON OF THE CUTANEOUS REACTIONS AND THEIR DIAGNOSTIC VALUE.—Hamill Carpenter and Cope (*Archives of Internal Med.*, December 15, 1908).
2. CUTANEOUS REACTIONS IN CHILDHOOD.—Feer (*Muench. med. Woch.*, 1908, No. 1).
3. OPHTHALMO-REACTION.—Wiens and Gunther (*Wien. klin. Woch.*, 1908, No. 36).
4. CONJUNCTIVAL TEST.—Baldwin (*Jour. A. M. A.*, Feb. 20, 1909).
5. 1000 TUBERCULIN TESTS IN CHILDHOOD.—Holt (*Archives of Ped.*, Jan., 1908).
6. CUTANEOUS REACTION.—Hermann (*Pediatrics*, March, 1909).
7. MODIFICATION OF CUTI-REACTION.—Tedischi and Lorenzi (*La Pediat.*, September, 1908).
8. STASIS IN CUTI-REACTION.—Aronade (*Jahrbuch f. Kinderheilk*, March, 1909).
9. PUNCTURE TEST.—Hamburger (*Muench. med. Woch.*, 1909, No. 1).
10. CUTI-REACTION IN FIRST HALF YEAR OF LIFE.—Siegert (*Deutsch. med. Woch.*, 1908, No. 39).
11. CUTI-REACTION IN NEWLY BORN.—Bondy (*Muench. med. Woch.*, 1908, No. 39).
12. HYPERSENSIBILITY.—Moro (*Muench. med. Woch.*, 1908, No. 39).

The literature concerning the cutaneous reaction for tuberculosis has grown so rapidly of late that only a cursory review of existing views is possible in such a summary as this. It would appear to be rather generally admitted that the ophthalmo-reaction presents no advantage over the cutaneous tests, while the dangers following its use are real and to a degree unavoidable. In a very careful series of comparative tests, Hamill, Carpenter and Cope found that practically there was uniformity of results in the ophthalmo, the cutaneous (v. Pirquet) and the percutaneous (ointment test of Moro) tests. They found, however, that the eye test is not nearly as satisfactory as the others, on account of its dangers. Similar conclusions, based upon a study of 409 cases, were reached by Wiens and Gunther. Indeed, various authors have found unpleasant and, at times, serious sequelæ to follow the eye test. If, as seems probable, further investigations will show that this test has no advantage over the skin test, it will doubtless fall into disuse, particularly as regards its use upon children. Comparing the scarification and ointment tests, Hamill and his associates found that the ointment test offers the advantage of eliminating any denudation of the skin, thus lessening the chance of infection.

Baldwin, reporting 1,037 tests, finds that the eye test is more dangerous than the skin test, without any compensatory advantage. He believes

the cutaneous test to be distinctly better. Hamill and Carpenter made 85 subcutaneous tests (by hypodermic injections of tuberculin) in confirmation of skin tests previously made; 63 had been positive, 22 negative to the skin reactions. All the negative cases were confirmed by the subcutaneous tests. In 2 of the cases, originally positive, confirmation was lacking; in 1, it was doubtful. These authors hold that negative tests, especially if repeated, are of more value than the positive reaction in definitely excluding the possibility of tuberculous infection. Prognostically, a gradual diminution of the reaction in advanced cases may indicate an unfavorable course. Feer emphasizes the fact that a negative reaction is of special value in older children, because between the ages of 10 and 15 years, 35 per cent of non-tuberculous children react, considering non-tuberculous to mean that there is no active focus present. This proportion diminishes in early life, and in nurslings a positive reaction may be interpreted in the sense of an active tuberculous infection. Baldwin does not think that the test has any prognostic value. Simply as an aid to diagnosis, its value is indisputable. He thinks that the subcutaneous test should be reserved for cases where a focal reaction at the site of the disease is desired, and when the other tests are negative. Siegert regards the cuti-reaction as specific even in the very early months of life, contrary to the view formerly expressed that young infants would not react. Cases of positive reaction before the end of the third month of life are reported. Siegert finds that the test is often positive in infants in beginning as well as in advanced lesions. Bondy tested 350 infants by the cuti-reaction, the tests being made between the second and fourth day of life in each instance. All of the tests were negative. Of the respective mothers, all of whom were tested at the same time, 252 (71 per cent) gave a positive reaction. A satisfactory explanation of the phenomenon is not offered.

Contrasting the various reactions, Hermann finds that these tests are of more value in infancy and early childhood than they are in adult life. Thus, a positive reaction in early life is of greater significance, because at this time there is less likelihood of the presence of healed tuberculous lesions. He holds that the subcutaneous test is possible only in afebrile cases, and practical only in institutions where very careful post test control can be had.

He finds the puncture test too painful and without advantage over the cutaneous tests. This view is at variance with that of Hamburger. As a result of his studies, this latter author holds that if in a suspected case in childhood the cuti-reaction is negative, an appropriate dose of tuberculin should be injected subcutaneously with special reference to a resulting puncture reaction (at the site of injection). This latter, if it occur, is to be regarded as proof positive of tuberculous infection. According to Hamburger, cases not reacting to the skin, will give a positive puncture test subsequently. His views in this regard are upheld by v. Pirquet, the originator of the cutaneous test (and, indeed, by many other investigators. Ed). Hermann finds the conjunctival test not free from danger, especially if the conjunctiva be not altogether normal. The inunction test, according to Hermann, is not as easy as the cutaneous test, over which it possesses no advantages. According to this author, the cutaneous test has the advantages of simplicity, ease of application and freedom from danger. No special preparation is required, the ordinary crude tuberculin being used. The test has the great advantage of being applicable for ambulatory cases,

as examination is not required for twenty-four to forty-eight hours after the test is made.

Tedeschi and Lorenzi, after reciting the dangers of the eye test, suggest a modification of the skin test, using the lobe of the ear. They use a small syringe of 1 cc. capacity, filled with an aqueous 5 per cent solution of tuberculin. The helix of the child's ear is cleansed, held between thumb and finger, and a certain quantity of the fluid injected under the skin. The test is said to be without danger, and there is no doubt relative to a positive reaction as sometimes occurs in the skin test. The procedure has the further advantage of permitting dosimetric graduation of the amount of tuberculin used. The practical advantage of the area chosen (lobe of the ear) lies in the fact that because of the extreme thinness of the skin, the subcutaneous swelling can most easily be discerned. Aronade calls attention to the diagnostic value of stasis in the cuti-reaction, basing his conclusions upon 150 positive reactions in children and adults. Through stasis, artificially induced about the site of scarification, by any method of localized hyperæmia, small hemorrhages can be provoked in the region of the papule, while the control areas remain free. He finds this procedure of special importance in doubtful cases, where reactions are torpid and for cases of miliary tuberculosis, where the cuti-reaction may be doubtful.

Studying his ointment test, Moro finds that the nervous system must surely be involved in the tuberculous reaction. After inunctions, Moro obtained a symmetrical reaction in corresponding body areas where no tuberculin had been applied. In the light of such phenomena, the percutaneous reaction is to be regarded as a vasomotor manifestation, a sort of angioneurotic inflammation.

Holt has made a careful series of tests, 1,000 in number, in young children. He finds that young infants do not respond to the eye test, which is, moreover, not free from danger. No reaction was obtained in dying children or those suffering from extreme prostration. This corresponded to his experience with the cutaneous tests. Six hundred and fifteen eye tests and 217 skin tests were made. The reaction in general corresponded to the pathological lesions. This latter test has the advantage of ease of application, absence of necessity of close watching, and absence of all unpleasant sequelæ. The reactions were easily recognizable with control.

The puncture test, made 38 times, did not appear to have any advantages over the other tests.

Holt finds that fever reactions with tuberculin (subcutaneous injection) are quite as reliable in children as in adults. In general there is not much difference between the skin and eye tests, as regards reliability, but much as regards safety. No test is as absolutely reliable as the demonstration of tubercle bacilli in the sputum, cerebro-spinal fluid, and these tests cannot entirely take the place of careful clinical examinations, but should be considered as merely valuable adjuncts. In general, while the tests furnish strong testimony as to the probability of the existence of tuberculosis, they cannot ordinarily enable us to distinguish between active and latent foci of the disease.

NYSTAGMUS WITH RELATION TO DIAGNOSIS OF LESIONS OF THE INNER EAR AND CEREBELLUM.

A REVIEW OF RECENT LITERATURE.

By WM. B. CHAMBERLIN, M. D.

1. UNTERSUCHUNGEN UEBER DEN VOM VESTIBULAR-APPARAT DES OHRES REFLEKTORISCH AUSGELOSTEN RHYTHMISCHEN NYSTAGMUS UND SEINE BEGLEITERSCHEINUNGEN.—Barany.
2. PHYSIOLOGIE UND PATHOLOGIE—Functions Prüfung des Bogen-gang—Apparates der Menschen.—Barany (*Klinische Studien*).
3. NEW METHODS OF EXAMINING THE SEMI-CIRCULAR CANALS AND THEIR PRACTICAL SIGNIFICANCE.—Barany (*Annals of Otology, Rhinology & Laryngology*, 1908, p. 755).
4. EXPERIMENTAL NYSTAGMUS WITH AN APPLICATION OF ITS PRINCIPLES TO THE DIAGNOSIS OF LESIONS OF THE INNER EAR AND CEREBELLUM.—Chamberlin (To appear in the *Annals of Otology, Rhinology & Laryngology*, 1909).
5. REACTIONS OF THE LABYRINTH AND THEIR SIGNIFICANCE IN THE DIAGNOSIS OF SUPPURATIVE LABYRINTHITIS.—Davis (*Jour. A. M. A.*, November 21st, 1908, p. 1754).
6. THE NON-ACOUSTIC FUNCTIONS OF THE LABYRINTH. A Review of Our Present Knowledge of the Organs of Static and Dynamic Equilibrium.—Friedenberg (*Annals of Otology, Rhinology & Laryngology*, September, 1908, p. 670).
7. TREATMENT OF INFECTIVE LABYRINTHITIS AFTER FIFTEEN YEARS' EXPERIENCE.—Jansen (*Annals of Otology, Rhinology & Laryngology*, June, 1908).
8. DER OTITISCHE KLEINHIRNABSZESS.—Neumann.
9. CIRCUMSCRIBED PURULENT INFLAMMATIONS OF THE LABYRINTH.—Neumann (*Annals of Otology, Rhinology & Laryngology*, 1908, p. 762).
10. SYMPTOMATOLOGY AND DIAGNOSIS OF LABYRINTHITIS CONSECUTIVE TO PURULENT OTITIS MEDIA.—Reik (*Annals of Otology, Rhinology & Laryngology*, 1907).
11. THE FUNCTIONS OF THE END ORGANS IN THE VESTIBULE AND SEMI-CIRCULAR CANALS AND THE METHODS FOR EXAMINING THESE CANALS IN PRACTICAL DIAGNOSIS.—Shambaugh (*Jour. A. M. A.*, April 3d, 1909).

Nystagmus is of two kinds—undulating, where both movements are equal in time and extent; and rythmical, consisting of a slow and a quick component. Nystagmus of otitic or of cerebellar origin, belongs to the second group. The nystagmus is designated as being to the right, the left, or vertical from the direction of the quick component. It may be pure vertical, horizontal or rotatory, or various combinations of these. Glance in the direction of the quick component increases the intensity of the nystagmus. Glance in the opposite direction causes it to diminish or disappear.

Typical ear nystagmus can be produced experimentally by turning, by injections with hot or cold water, or by electrical stimulation.

Turning. If a patient is placed on a revolving stool and turned ten times to the right during an interval of twenty seconds, there is produced during the turning, the head being in the upright position, a horizontal nystagmus to the right, *i. e.*, the quick component is to the right, the slow toward the left. On cessation the nystagmus is reversed, the quick component is toward the left, the slow toward the right. If the head instead of being held vertical, is tilted forward at an angle of ninety degrees during the turning, the nystagmus as well as the after nystagmus are rotatory instead of horizontal. On account of the greater convenience observation is usually made of the after nystagmus—the nystagmus after the turning has ceased.

Heat and Cold. Injecting the right ear with water above body temperature causes a nystagmus to the right. Injecting it with water below body temperature causes a nystagmus to the left. Similar results are, of course, obtained by injecting the opposite ear. The nystagmus is due to the heat or cold and not to the pressure as may be shown by substituting hot or cold air for water. Stimulation with water above body temperature then causes a nystagmus toward the side of stimulation; cold water a nystagmus to the opposite side.

Electrical Stimulation. If the kathode, or negative, pole of a galvanic battery be placed on the tragus, while the anode, or positive pole is held in the hand, during the passage of fifteen to twenty milliamperes of current, there will be a nystagmus toward the stimulated side. Substitution of anode for kathode causes a nystagmus to the opposite side. The ear reacts to electrical stimulation when there is no longer a reaction to heat or cold. This would suggest that the electricity affects the nerve fibres themselves, while the heat or cold affects only the endings. Compression and rarefaction of the air in the external canal causes nystagmus where there is a fistulous communication between the middle ear and labyrinth. One may even produce movements of slight extent where there is no longer a reaction to heat or cold. The reason is that the pressure has a more marked effect than caloric stimulation. In cases of fistula the direction of the nystagmus may be various, but aspiration will always give the opposite result from compression. The caloric test should, of course, always be made in addition.

Pathological Cases. Circumscribed perforations or irritative lesions, the result of an extension of the suppurative process from the middle ear to the labyrinth, cause a nystagmus toward the side of the lesion; while destructive lesions or diffuse suppurations cause a nystagmus to the opposite side. In diffuse suppurations the function of the labyrinth is destroyed and injection of the affected ear will produce no effect. With circumscribed inflammations, the affected ear will still react to stimulation with heat and cold. If, on account of the presence of granulation tissue it is impossible to bring the hot or cold water into immediate contact with the labyrinth, turning will be a valuable aid in establishing a diagnosis. For example, in a diffuse suppuration associated with destruction of the right labyrinth, the after nystagmus to the left, after turning to the right, will be greater than the after nystagmus to the right, after turning to the left. In other words, in destruction of the labyrinth, the after nystagmus to the sound side is greater than the after nystagmus to the diseased side.

In cerebellar abscess, the nystagmus will be toward the affected side and injection of the affected ear will be void of result, for experience

has shown that cerebellar abscess is associated with diffuse and not with circumscribed inflammations of the labyrinth. The nystagmus from cerebellar abscess further differs from that of labyrinthine origin in that, in the former, the nystagmus gradually increases in intensity; whereas, in the latter, it decreases in intensity fairly rapidly, so that in a period varying from fourteen to twenty-one days following a diffuse suppuration we may have no nystagmus at all.

At the beginning of a diffuse suppuration, or after ablation of the labyrinth by operative interference, we have a nystagmus of extreme intensity. It is present not only with glance in the direction of the quick component, but with glance in the opposite direction and straight ahead as well. After a varying interval the nystagmus with glance in the direction of the slow component is lost, next that with vision straight ahead and finally the nystagmus with glance in the direction of the quick component. We have here a quantitative estimate of the nystagmus.

The nystagmus is associated with dizziness. This differs in character with the individual. The subject may seem to be standing still while the objects revolve about him, or *vice versa*. He may even seem to revolve with the objects or in an opposite direction. Glance in the direction of the quick component not only increases the nystagmus, but the dizziness as well, while glance in the direction of the slow component decreases the dizziness or causes it to disappear. If loss of equilibrium is associated with the dizziness, the patient falls in the direction of the slow component, though he may have the sensation of falling in the opposite direction.

The position of the patient in bed is interesting as well as of diagnostic importance. With a diffuse suppuration on the right side, he will have a nystagmus to the left. Nystagmus and dizziness will accordingly be extreme with glance toward the extreme left. With such a lesion, the patient will lie on the left side. In this position the eyes are directed away from the pillow and toward the right, for the dizziness and discomfort are thereby decreased. He lies on the side opposite to the lesion.

In cerebellar abscess on the right, the nystagmus is toward the right. With the face buried in the pillow, he looks toward the left, decreasing his nystagmus. He lies on the side of the lesion.

Conclusions. 1. Ear nystagmus is rotatory and rythmical in character. 2. Glance in the direction of the quick component increases the nystagmus. Glance in the direction of the slow component causes it to disappear. 3. Experimental and spontaneous nystagmus will give us accurate information as to the character and location of the lesion. 4. The position in bed is easily explained on scientific grounds and is of diagnostic value. 5. Heat, kathode stimulation, circumscribed inflammations and cerebellar irritation, all cause a nystagmus to the stimulated or involved side. 6. Cold, anode stimulation and diffuse suppurations, all cause a nystagmus to the unstimulated or sound ear.

RENAL DECAPSULATION IN PUERPERAL ECLAMPSIA.

A REVIEW OF RECENT LITERATURE.

By HUGO EHRENFEST, M. D.

1. RENAL DECAPSULATION IN PUERPERAL ECLAMPSIA.—Croom (*Edinburgh Med. and Surg. Jl.*, May, 1909, p. 443).
2. RENAL DECAPSULATION IN PUERPERAL CASES.—Buist (*Ibidem*, p. 452).
3. THE PHYSIOLOGIC BASIS FOR DECAPSULATION OF THE KIDNEY IN ECLAMPTIC ANURIA.—Nicholson (*Ibidem*, p. 456).
4. ZUR NIERENAUSHUELUNG ODER NIERENSPALTUNG BEI EKLAMPSIE.—Sippel (*Zentralbl. f. Gyn.*, No. 51, 1907, p. 1586).
5. DECAPSULATION OF THE KIDNEYS IN ECLAMPSIA.—Mueller (Orig. in Danish. *Abst. in Jl. Am. Med. Assoc.*, Feb. 20, 1909, p. 673).

Decapsulation of the kidneys as a surgical treatment for chronic nephritis was first recommended by Harrison for cases in which there was evidence of an increased tension of the kidneys. Sippel (4) accepting this idea first suggested this operation for cases of puerperal eclampsia. He found the kidneys of patients, who had died from eclampsia, in a state of venous congestion terming this condition very suggestively as renal glaucoma. The operation was actually performed for the first time on a woman suffering from eclampsia by Edebohls, of New York. In a book entitled "Surgical Treatment of Bright's Disease," published in 1904, he detailed his personal experience with this operation in 72 cases of chronic nephritis which number included one case of puerperal eclampsia. Another case he reported later.

According to Croom (1) whose paper gives an accurate bibliography of this subject, this operation, up to the present time, has been performed for eclampsia on 32 patients, of whom 17 recovered, or including Croom's own case on 33 patients with 18 recoveries. It may be stated here that very recent literature contains a few more reports of favorable results. Thus out of three cases operated by Buist (2) two recovered. Mueller (5), in a paper published earlier than that of Croom, has recorded another favorable case. He was able to collect 23 cases from literature, and showed that in the eight fatalities scarcely in any one instance could the decapsulation be held responsible for the unfavorable outcome. That the percentage of failures apparently is high cannot be surprising because this operation to-day is performed only after all other forms of treatment have been tried and exhausted. It must be remembered that Edebohls originally suggested to perform this operation during pregnancy, and thus to enable the woman to go to term. Obviously the objection was made at once (by Sippel) that it would seem inconsistent to attempt to permanently relieve this serious condition without first removing the essential cause of its existence, *i. e.*, the pregnancy. Soon the idea was generally accepted that renal decapsulation can be resorted to only after the uterus has been emptied either

artificially or spontaneously, and to-day this operation is considered especially adapted for desperate cases in which convulsions continue after labor, or make their first appearance post partum. The immediate indication for surgical interference, as a rule, will be given by an anuria. "Whatever the remote cause of eclampsia may be," writes Croom, "the condition is mainly one of toxemia with insufficient elimination. This is shown by its mode of onset, by the prodroma when present, and the degeneration of the parenchyma of liver and kidneys, as well as by the improvement brought about by eliminative treatment of any kind, when the condition has not advanced too far. Every one patient who recovered after the operation very soon began to pass largely increased amounts of urine and of urinary solids and of urea."

The rationale of this operation is that the stripping or incision of the capsule permits the restoration of the blood circulation through the kidney, and re-establishes diuresis with rapid elimination of toxins. I have already referred to Sippel's idea of a glaucomatous condition of the kidney in the eclamptic state. Nicholson (3) offers the following interesting explanation of the physiologic basis for decapsulation in eclamptic anuria: There is in these cases invariably present an increase in arterial pressure. Investigations have shown that at the beginning of the convulsive state arteries available for palpation are markedly contracted. At this stage the secretion of urine may not be diminished. As the condition progresses the blood-pressure still rises higher, but in spite of this fact the quantity of urine steadily diminishes. In eclampsia, when the blood-pressure is at its highest, the secretion of urine is at its lowest—is perhaps abolished altogether. At this stage it is probable that convulsions or coma will be present. Some profound alteration in the circulation of blood through the kidneys must have taken place. Such sudden renal incompetency may be explained by circulatory disturbances alone, even in the healthy kidney, in the absence of any previous pathologic changes. One is forced to this conclusion when one recalls the many instances in which, as soon as the convulsions subside, all the renal symptoms disappear, and there is rapid and complete restoration to health. That the secretion of urine is not a simple consequence of the blood-pressure in the renal vessels, as one would expect from the teachings of physiology, can be proved by the fact that compression of the *renal vein* actually arrests the secretion of urine. The secretion of urine increases and diminishes with the increased and decreased *flow of blood* through the kidneys. This physiologic fact is a most important one, for what happens to the kidney is that, as the result of the eclamptic condition, the flow of blood through its vessels is entirely stopped. Nicholson finds support for this assumption by the effect of certain vaso-constricting drugs upon renal circulation and urine secretion. The various circulatory features which develop during the eclamptic state, clearly point to the presence in the blood stream of some powerful vaso-constricting substance. If a vaso-constricting drug is introduced in small quantity it acts upon the arteries and arterioles of the body to a moderate degree. More blood then flows through the vessels of the kidneys and, as well known, with the rise of the blood-pressure in the glomeruli the secretion of urine is increased. But if the vaso-constricting substance, introduced in larger quantity, acts more powerful, it will also exert its contracting effect upon the renal artery and its branches. The secretion of urine under such conditions must be diminished or entirely stopped. And yet the brachial or radial pressure is found enormously high. "This is no fancy picture, because it

can be produced by such a drug as digitalis." Peculiarly enough with the decrease of the arterial blood supply the veins become congested, as has been shown in animal experimentation. This additional interference with circulation is very unfortunate for the eclamptic patient. This may, however, explain why suddenly a large amount of albumin may appear in the urine and again disappear shortly afterwards.

This briefly is the explanation given by Nicholson for eclamptic anuria as it occurs in women who have never previously suffered from nephritis. This same alteration may, of course, occur when the kidney happens to be affected by a chronic parenchymatous or interstitial nephritis.

There are only two ways in which it is possible to get more blood to flow through kidneys affected in this manner. One way is to dilate the renal arteries. There are certain drugs—particularly the nitrites—that have the power of dilating vessels. Most of the drugs, however, used for this purpose produce a dilation of *all* the blood-vessels in the body, probably including those of the kidney, but thus fail to produce the desired specific effect upon the kidneys. The other way to start the flow of blood in eclamptic anuria is obviously *to lower the pressure of blood in the renal veins*. Very free purgation will lessen the venous congestion in the kidneys, so also will dry cupping over the loins, and free bleeding from a large venous trunk. But if anuria is complete, the patient is gravely ill, and all other means have failed, then there is no doubt that "the quickest and most useful thing to do is to expose the kidney and draw off blood directly from the venous plexuses of the organ. In cases of eclamptic anuria occurring in women who have not previously suffered from nephritis, and who in all probability have healthy kidneys, complete decapsulation is not necessary." The fact, mentioned above, may be recalled once more, that in all cases which ended favorable a free diuresis immediately followed operation.

Decapsulation, performed by competent hands, is not a dangerous operation, but can and should be resorted to in eclamptic patients only after all other known means of relief have been exhausted, obviously including the emptying of the uterus. While plainly indicated in cases of anuria, one has to agree with Croom that the operation should not be limited to this indication, but can be successfully performed whenever it is apparent that the kidneys are the organs most seriously implicated.

CORRESPONDENCE.

PARIS LETTER.

By AUGUSTE A. HOUSQUAINS, M. D.

"FULGURATION" IN THE REMOVAL OF MALIGNANT TUMORS.

The numerous tentative efforts of treatment of cancer by electricity, which have been so decidedly to the fore of late, have not yielded the high hopes entertained by those who were expecting glittering results from hasty experimentation. Invariably when one or another electrical method gives proof of its inefficiency, we see surgeons affirm that surgical intervention is at present the only possible means at our disposal to establish hope with those who are afflicted with this disease. And even when what is now extolled as the process of "fulguration" was first advocated, there was a similar attitude of scepticism on the part of those who firmly believe in the efficacy of the knife.

Nevertheless, numerous facts have accumulated since the eventful day when Professor Pozzi, in July, 1907, presented to the Academy of Medicine a report on a communication of Dr. de Keating-Hart, of Marseilles; and though at the time a certain number of surgeons showed themselves refractory to the method, there were others, on the other hand, who thought it was impossible to judge of its far-reaching results since it had been given only a preliminary trial. But the immediate results had been encouraging enough; in fact, in some instances, beyond expectations; and this being the case, the consensus of opinion was that further experimentation should be encouraged. Hence, it would appear that "fulguration" is a method which should definitely enter into our therapeutics, and, moreover, should receive the study to which a useful therapeutic measure is entitled.

To dissipate all confusion in the mind of the reader, it is necessary to define at once, in a clear and precise way, what is really meant by "fulguration" of the tissues. Not only is it a method whose action is electrical, but it is a therapeutic measure consisting of a combination of surgical and electrical interventions. Hence we are justified in describing it as an electro-surgical procedure which has for its object a special reaction on the tissues. Let us at once admit that its action is one of cauterization and that destruction is only secondary. The intervention begins with the throwing out of sparks, rapid and diffuse, followed by a surgical operation, properly called; and finally by "fulguration" again.

In the beginning, Dr. de Keating-Hart advised only the curettage of the tissues by the sparks. Later he advocated, after the preliminary use of the sparks, the ablation of the indurated and vegetating masses by the surgeon, a procedure which he characterized as "insufficient surgery,"

and following this, the use of the sparks again. 'To-day he claims that to obtain a truly lasting result, "the necessary minimum of the surgical act is the complete ablation of the macroscopic lesions"—that is to say, all the masses, be they indurated or vegetated, which the eye or finger reveals as being of the nature of a neoplasm. Therefore, the surgeon ought to perform an operation as extensive and complete as possible, leaving a vast bleeding area on which the spark system can be made effective.

To practice "fulguration" one utilizes high-frequency currents, furnished by an apparatus with a bobbin which indicates the inductance, a Wähnelt turbin interrupter of maximum speed, a Gaiffe-d'Arsonval gasoline condenser, and finally Oudin's resonator. It is necessary to add that carbonic acid or compressed air is used to cool the electric spark as much as possible. The operator must know what conditions would be benefited by the reactions; and in the absence of the apparatus, permitting the dosage of the electric action to be gauged, one of the most delicate points in the technique arises.

What are the results of the spark system? The skin becomes ischemic around each spot upon which a spark has fallen and mortification soon follows, if the action is too prolonged. And here it would be well to emphasize that cauterization is not the object. The hemostatic and analgesic effects are remarkable. These are the immediate results. Subsequently and almost consecutively, a most important phenomenon supervenes—lymphorrhea. Immediately after the operation the dressings covering the wound are impregnated with a liquid, hardly red enough to be blood. This is yellow in color and serous, and the abundance and continuance of the flow are very variable. Rich in polynuclear cells, it is the first evidence of the defensive reaction of the tissues.

The abundant serous flow which follows "fulguration," prevents the immediate reunion of the wounds. The retention of this very septic fluid can cause the death of the patient. Therefore, it is incumbent on the operator to assure its free and uninterrupted egress by large and numerous drainages, to avoid any or all the grave phenomena of intoxication. This toxic lymphorrhea seems to be due to the infection of the wound at the moment of operation. The immediate reunion, which is impossible and dangerous to-day, will, in the course of time, when our knowledge is further advanced, be not only possible, but unattended by untoward results. The serous exudate which necessitates the changing of the dressings many times during the first twenty-four hours, stops altogether at the end of some days.

Ere long there appears on the wound a greyish or yellowish friable membrane; this is the eschar produced by a veritable sideration of the tissues, and not by cauterization. Before the eschar comes off, and especially at the time it is about to separate, there appear fleshy rose-colored elevations, which are velvety and elastic to the touch. They rapidly cover the vast losses of substance and the cicatrization of the wound sets in at once. The cicatrix, though hurriedly formed, is neither fragile nor keloidal. It consists of bands or nodules of fibrous tissue, the combined amount being much smaller than the loss of substance they fill in. The process of reconstruction of the tissues is truly incredible, irradiating to a certain distance and stimulating the lymphatic ganglia which are remarkably torpid. Although cicatrization is most active, there is an absence of infectious complications.

The electro-surgical method called "fulguration," ought then to occupy a right honorable position in the treatment of cancer. At a recent meeting of the French Society of Medical Electro-Therapy and Radiology,

M. Zimmern, in a report which was commended by his colleagues, supported the opinion of its worth and value. Although not in full accord with Dr. de Keating-Hart as to the details of the technique, he thinks that various writers, in particular the Germans, who are only partially satisfied with this method, have employed a defective operative method which should not be held responsible for their failures. He further contends that for him the great advantage of the new procedure is the formidable production of fibrous tissue, which destroys all the neoplastic tissue that somehow has eluded the knife and the sparks.

The results in cancer of the face are exceedingly brilliant, but when the mucous membrane is affected, they are hardly so gratifying. When the vagina, the uterus, and the rectum are affected, the definite results are variable; but even if "fulguration" does nothing else, it ameliorates some of the symptoms, especially pain. Many of the inoperable cases become operable, thanks to "fulguration," and the operable neoplasms are also helped by this method. "Fulguration" is an excellent auxiliary in surgical intervention, especially where cicatrization is desired. The surgeon ought to remove as much of the cancer as possible, and if nothing of the growth remains, "fulguration" will produce a rapid and solid cicatrization, which will cover the loss of substance in a manner unlooked for; if all the cancerous growth has not been removed, the production of connective tissue, under the influence of the sparks, transforms the remains of the active and florid neoplasm into a neoplasm that is torpid and indolent. Thus the limitations of the surgeon are considerably extended. When "fulguration" is properly done, it adds no risk to those other risks inherent in a surgical operation. Our thanks ought surely to be extended to Dr. de Keating-Hart for his perseverance in inviting the attention of the surgeons to a method that is very useful.

May 10.

OBITER DICTA FROM FOREIGN JOURNALS.

THE ART OF OBSTETRICS IN THE MIDDLE AGES.

Dr. Soalhat, in his Paris thesis, reproduces a very curious manuscript of the Middle Ages which is attributed to Maitre Alebrand, of Florence, an Italian doctor who was attached to the court of St. Louis, and flourished at Troyes in 1270. This doctor was the first member of the medical profession who was courageous enough to deny the usefulness of the Latin tongue as a medium for expressing medical thought on paper; and in his advocacy and adoption of a vulgar language he went contrary to accepted tradition to so great an extent that severe criticism was visited upon him. But in the end he won out, and his manuscript, which Dr. Soalhat draws upon extensively, attests to his prescience that even a vulgar language has enough intrinsic value to make serious thought, such as medicine must always be, effective reading. The manuscript treats of puericulture, and not unlike other writings that date back a number of centuries, this special medical offering of the Italian doctor contains some quaint advice and naive observations, put forth in language of great simplicity. According to Alebrand, the pregnant subject ought to avoid all food that is not fresh, diuretics, and emmenagogues; she should eat little but often, and then only food that is easily digested; and she ought, especially, in the first and last months of pregnancy, to guard herself against giving way to anger, or engaging in work, thinking, and any endeavors that might result in fatigue; for these are unmistakably "traumatisms"! Baths should not be neglected but lengthy sojourns in the sun must be decried. A fortnight or three weeks before delivery, a regular treatment, that has for its object the easy egress of the child, should be instituted. Emollient sitz-baths followed by inunctions of the legs, thighs, and vulva, should be ordered, as well as wine with the addition of balsam; the latter only in case the patient is rich; otherwise, a decoction of the roots of costmary and artemisia will answer the same purpose. Besides all this Alebrand recommends sternutatories, the gentle (?) exercise of walking up and down many steps, and the use of perfumes on the genital parts to facilitate the drawing down of the womb! But the *clou* of all this remarkable advice is reached when he says that "in case the child does not lie in the normal position the services of a midwife to effect version are absolutely necessary."

AN INTERESTING CHAPTER IN THE HISTORY OF TRACHOMA.

In connection with Greef's recent discovery of a trachoma bacillus, the Vienna *Neue Freie Presse*, of April 7, publishes some interesting data which show that the national history of Austria is closely allied with an interesting phase of this disease, since it was at the battle of Aspern

that the celebrated oculist, Friedrich Jäger v. Jägersthal was incited to study and treat trachoma. The Austrian army was not overcrowded with physicians; hence, when Jäger was barely twenty-five he was appointed in charge of a field-hospital. During the first days at Aspern, he conferred with the heads of the medico-surgical departments of the French and German armies, Larrey and Assalini. The former on account of his arrogance made light of Jäger's knowledge, but the latter was kind and considerate and lent a willing ear to the young oculist's questions. Assalini had also accompanied the French army to Egypt so he was no mean authority on the subject of trachoma, and in his learned conversations with Jäger gave the history of the disease as it affected the French soldiers since the return of Napoleon to France, and its spread through infection among the Prussian soldiers after the battle of Jena, October 14, 1806. Jäger was so deeply interested in the matter that from now on he devoted himself to the study of the disease. When the Austrian troops invaded France it was Jäger who instructed them as to what precautionary measures to take to prevent infection. So great was his success, and so thoroughly had he enlisted the attention of the Austrian Emperor, Francis I., that his fame extended beyond the confines of Austria; and ere long King Frederick William III., of Germany, sent for him to effect similar desirable changes in the Prussian troops. In fact, it is to Jäger that all credit must be given for the widespread of this disease in the first and second decades of the nineteenth century, for every European army profited by his illuminating lessons.

THE SOCIAL RESPONSIBILITY IN MATTERS OF ALIMENTATION.

"Adulteration of commodities," says Dr. Vandeveld in a recent number of *La Clinique*, "is the outcome of the following causes: love of gain—an ambition inseparable from the fundamental thought of the human brain; competition which is so decidedly on the increase from day to day that it now amounts to a bitter warfare; progress of science which permits of the dissimulation that goes to the perpetrating of frauds with greater and greater ease; and finally—though we reluctantly admit it—the irrepressible and the unexplainable pleasure of thrusting a fraud upon the world." In fact, the ideas, which are paramount with regard to what constitutes alimentation and alimentary hygiene, are quite erroneous enough to invite the important question: Whether parents, when brought face to face with the problem of what they have effected in the way of alimentation for their children, or manufacturers and merchants with what they have sold to their customers, or competent authorities with what they have achieved in the cause of this important matter, would be in a position to show that their standard involved the best thoughts of social responsibility? From time beyond the memory of man adulteration has been in force, and at no period in the history of the human family has alimentation been uninfluenced by the arbitrary ideas which a falsity, born of a stupid and ignorant routine, made possible. But in an earlier period its untoward influences were not so extensive as to-day, for there were certain laws enforced in the dawn of what we moderns call civilization, that effectively combated its liberties and privileges. In Brabant, for instance, there existed a custom

in the Middle Ages that was both just and barbarous, the punishment for adulterating wine by an excess of water taking the form of amputating one or several fingers of the offending merchant, according to his repeated attempts at deception.

To-day the conditions which obtain in our communities are different from those which an earlier age knew; the inhabitants are crowded in spaces more and more encroached upon. Industry, by its enormous scope, has developed into a country's greatest asset; but though its strides are a source of pride to all, the momentous problem should not be forgotten that it lessens almost daily, by virtue of its growth, the hygienic conditions of populations in a truly deplorable manner. And this is why public opinion, abetted by the powers, has thought it necessary to intervene in an efficacious manner, so as to restrain adulteration and rectify the ideas which pertain to doing things in a routine way; thus hoping directly to protect the public health.

On account of this state of affairs, a number of general measures which, unfortunately, in certain instances, seem to have been enacted to limit the scope of industry, are really indispensable. The lack of the necessary knowledge is in general the fundamental cause of the defective situation of which we are about to speak. The "intellectuals" are devoted to their books and by their mental applicability are not only obtuse to demands which should engage their attention, but are making inroads into their constitutions by producing a low degree of physical resistance; while the amateurs, who are frenziedly occupied with their athletics, make much more of the development of their muscles than of the questions which should assail them. As for the workman, whether in the field or in the factory, he surely cannot be considered fortunate as regards his intellectual status. He may have had the benefits of an early school training, but may also have forgotten all he ever learned, or be altogether without this limited amount of intellectual help. The result is, that at an age when he ought to benefit, by instruction, from professional knowledge as to what he should do to conserve his own health and that of his family, his mind is unresponsive, and the fatigue which characterizes it, soon brings about a state of indifference.

Fortunate, indeed, are the people who consider instruction indispensable, and who find in science an excellent guide in the pursuits of industry and commerce; but fortunate also are the people whose component parts are not affected by mental instability and by the philosophy of brute force, and whose development harmonizes with the normal and practical resources of an advanced civilization so as to resist, in as successful manner, the inevitable undermining dangers which this sort of civilization stands for—a social condition that is artificial, if not false and contrary to nature, but necessary to the making and maintenance of modern society.

SOCIETY PROCEEDINGS.

ST. LOUIS SURGICAL CLUB.

Meeting of April 14, 1909.

Dr. George W. Cale read a paper entitled "A Case of Bence-Jones Albumosuria in Myeloid Sarcoma of the Humerus," for which see page 395.

DISCUSSION.

Dr. Willard Bartlett said that, from the macroscopic appearance, the x-ray picture, and microscopic view he had had, it occurred to him on first thought that it was a sarcoma originating in the marrow of the humerus. He only regretted that in cases he had seen in the past he had not examined the urine to determine whether a Bence-Jones urine was present.

Dr. R. L. Thompson said that this brought them into a very complicated and debatable field of pathology, i. e., groups of tumors arising from cells of bone marrow and cells of the lymphocyte series. Tumors having their origin from certain cells of the bone marrow that produced myelocytes were recognized by pathologists as three different types; first, simple myeloma, a benign tumor, which never gave rise to metastases and the cells of which did not penetrate and destroy surrounding tissue. After the removal of these tumors they did not recur. The second type, which this specimen resembled histologically, was the myelogenous sarcoma. This occurred first as a single tumor, the cells of which originated from the bone marrow. It might present a varied histological picture in the character and arrangement of the cells. There might be cells similar to myelocytes, but without the myelocytic granules. These tumors infiltrated surrounding tissue and gave rise to metastases and were always fatal. The third type was that known as multiple myeloma. That was a condition in which the Bence-Jones reaction was found. In this condition there were numerous tumors. Histologically, they could be classed benign tumors, but occurring in such great numbers they were not benign so far as the patient was concerned. These conditions were much akin to Hodgkin's disease. In comparison, Dr. Thompson spoke of tumors arising from lymphatic tissue. There was the simple lymphoma, an enlarged growth of lymphoid tissue. At the same time it was the idea of many men that the so-called Hodgkin's disease should be in this class. Then there was a condition where there was a general enlargement of lymphoid tissue and this condition was termed a pseudo-leukemia and from the discharge of these cells in the blood there was a lymphatic leukemia. The whole pathology of this subject was very complicated and nearly every writer who had described a case had written it up from his own viewpoint. Only recently had there been any attempt to put these things into shape. The most difficult thing the pathologist had to encounter was the examination of a piece of tissue sent in without any history of the case.

Dr. William S. Deutsch had hoped that something would be said of the pathological status of this special class of cases, as to whether the injury that had gone before could be considered a cause of this growth, or whether it was one of those cases where it was doubtful whether the injury had anything to do with the origin of the growth. Dr. Deutsch presented a specimen showing an osteosarcoma in which there seemed to be a throwing out of new

bone rather than destruction of tissue. In this case one of the best x-ray men made a diagnosis of syphilis, from the x-ray picture, but upon amputation of the limb and examination of the growth it was found to be sarcoma of the bone. It would be interesting to know whether Dr. Cale's patient developed further metastases.

Dr. Elbrecht thought the case exceedingly interesting, as the patient had been seen before the tumor had really developed; and that up to the present time it was limited to this one focus. This case should be followed because it had been seen so early, which fact bettered the prognosis. There was only one other case operated on very early, in which no metastases occurred, the tumor starting in the clavicle. One point brought out by Dr. Coley was that the majority of men who commenced using the fluid were somewhat afraid of it and that nothing could be expected unless it was given very heroically. He would like to hear results on this method of treatment from those present who had used it in such doses.

Dr. Kirchner had used Coley's fluid whenever he had had an opportunity and there seemed a possible chance for the patient. In the advanced cases, especially about the neck, he did not think much was to be expected. In three cases that had been followed, he thought he had noted some result from Coley's fluid. About a year ago a man had been operated on at the City Hospital and left with an apparently good result. Later he was again operated on and it was thought worth while to employ the fluid. While under treatment the tumor did not grow, but now, a year later, there was a recurrence and the patient had been put on the treatment again. Dr. Kirchner believed that the method should be employed in such a way as to get a reaction if a good result is to be achieved. The reaction was such that the patient was in a serious condition, with a very high temperature. The subject of myelogenous leukemia had been mentioned. He had a case of leukemia at the hospital, the patient being in a very desperate condition. Coley's fluid was tried with apparently good results so far as the blood was concerned.

Dr. Thompson said that by using bacterial toxin in animals it was possible to prevent the multiplication of cells through the exhaustion of bone marrow; therefore, if in these cases it were possible to exhaust the bone marrow cells this would produce an alleviation of the condition.

Dr. Willard Bartlett was reminded of an incident which occurred about ten years ago when he was doing autopsies at the City Hospital. The patient had been under the care of a surgeon at one of the college clinics. This surgeon had lanced what he believed to be an abscess and the patient had speedily bled to death. At autopsy it was found that the supposed abscess was one of these destructive tumors which had originated at the upper portion of the humerus. Dr. Bartlett also said that the first observation that erysipelas had any influence on sarcoma was made by Professor Nussbaum, in Munich, and the patient was his own son. Dr. Bartlett had Dr. Bernays' word for this. He could not recall in how many cases he had tried this fluid, but he had seen a possible good result in but one case. The Coley fluid and the x-ray were used together. The patient, a little boy, was afflicted with a rapidly-growing tumor, in the kidney region, which had increased visibly during the week before operation. When the abdomen was opened it was found impossible to turn out the tumor; it had spread along the pelvis and there were nodules everywhere. A portion of the kidney could be seen imbedded in the new growth. The child, removed home, improved enough for the employment of the x-ray and Coley's fluid. About five years later this child, apparently was in fair health. The growth could still be felt but was smaller. What had held the tumor *in statu quo* he could not say; whether it was the x-ray which would probably not be very effective in such a deep growth, or the fluid, or both together.

Dr. Cale, in closing, said that the pathology of this matter is what interested him particularly. Most of the cases reported with Bence-Jones albumosuria were multiple myelomas, while this is a myeloid sarcoma.

BOOK REVIEWS.

THE EARLY EDUCATION OF CHILDREN. By Laura L. Plaisted. 398 pages. Henry Frowde, M. A., Publisher. Oxford University Press, New York, American Branch.

Though primarily intended to be a book for teachers, this volume will prove to be of considerable interest to the medical profession. The book is the outcome of many years' experience in teaching children and in training young teachers; it incorporates the results of careful study of kindergartens and lower class schools of England, France, Germany and America. Of special interest to the reviewer is the chapter on "The Medical Responsibilities of School Teachers," by Dr. Ormerod.

TEXT-BOOK OF OPERATIVE SURGERY. For Practitioners and Students. By W. S. Bickham, M. D., Surgeon to Touro Hospital, New Orleans. Third Edition. Greatly enlarged. 1206 pages, 854 illustrations. W. B. Saunders & Co., Philadelphia and London.

This is one of the most satisfactory text-books that has appeared in recent years, particularly in this latest edition, which has been most thoroughly revised, but has retained all the excellent features of the original. The development of a text-book is dependent on its reception by the profession and the industry and knowledge of the author, who in the subsequent editions has an opportunity to make his book of a character that lives. Thus the value of this volume is largely due to the uniform revision that has covered the former editions and made the present volume a complete and well classified exposition of the best of modern surgical methods, put in a form at once interesting and accessible.

PATHOGENIC MICROORGANISMS, INCLUDING BACTERIA AND PROTOZOA. By William Hallock Park and Anna W. Williams. Third Edition, thoroughly revised. Lea & Febiger. New York-Philadelphia. 1908.

Park's book in its two former editions has already been reviewed by us and its superiority over the usual routine manner of dealing with the subject was mentioned. Although the change in the make-up in the third edition of this book is considerable, it deserves the same praise that it received before. Especially valuable is the impartial dealing with the opsonic index mania, showing by circumstantial evidence how suspicious we should be of it. Doubts must be entertained about the positive assertion made that the Negri bodies of hydrophobia are protozoa or microorganisms of any kind. The evidence given by Miss Williams is not conclusive, as can be shown by methods of staining much superior to the ones she uses. Cases are known of typical hydrophobia, where no bodies or even suspicious formations could be found in any portion of the brain or spinal structures; neither in smears nor in sections where inoculation was positive. The number of Negri bodies is not always plentiful, but never is the amount so small that smears will not show them; even in sections they are found only singly in each ganglion cell. A negative finding in smears is not exclusive, as Miss Williams herself asserts. The rule is that only comparatively few bodies are found in a smear, and often it takes an hour to find a single typical one. More differential methods than the one Miss Williams pursued suggest in no way a living structure; and the nuclear character of the central and other granules cannot be proved by histologic methods. They are, like the formations in variola, specific degenerative products of cytoplasmic or nuclear changes.

A TEXT-BOOK OF THE PRINCIPLES OF ANIMAL HISTOLOGY. By Ulric Dahlgren and Will A. Kepher. New York: The Macmillan Co. 1908.

Text-books on histology are written in sufficient numbers by men who are competent to treat the subject; therefore, the supply of all possible information should suffice for some time to come. In spite of this fact, and the reluctance of granting a new book on histology any practical value and importance, the book of the authors quoted above must be viewed as a very important addition to the literature. All text-books on histology deal mainly with human his-

tology, but the scientific conception of histology and comparative histology has never been demonstrated in its real character before. The authors have given a picture of histology, comprising its general field and, moreover, do not restrict it to human and mammalian forms. They intended to produce a guide treating histology as a pure science; they have admirably succeeded in this attempt and the book is undoubtedly an invaluable addition to text-books on histology. It must serve, as the authors assert, as a broad foundation for future studies of morphology and embryology as well as for medical studies. For the fundamental principles even vegetable histology is utilized. The illustrations are exceedingly numerous and excel in definiteness and clearness anything hitherto published. The book ought to have a wide circulation so as to advance the study of histology.

A TEXT-BOOK OF GENERAL BACTERIOLOGY. By Edwin O. Jordan, M. D. W. B. Saunders & Co., Philadelphia and London. 1908.

The author's effort in writing this book was rather to make bacteriology more of a general biologic part of science than to lay stress on its detailed dealing with only the bacteria. He has succeeded in giving an excellent representation of bacterial life and its relation to all sides of human life. The reading of the book is a pleasure, although, of course, nothing new or original is advanced. It is intended to initiate the student of bacteriology into a higher conception of the meaning of his work; a commendable procedure, be it added. But to do this, a detailed familiarity with the manifold sides of the differentiation of different bacteria requires a more systematic though less interesting representation. This will, however, always remain the basis for scientific work in bacteriology; therefore, books as interesting and fascinating as is this one by Jordan are not for students, but for men who have mastered the basal experience in bacteriologic work and desire further to be introduced into the general meaning of bacterial life demonstrable by this experience.

A SYSTEM OF OPERATIVE SURGERY. By various authors, edited by F. F. Burghard, M. S. (Lond.), F. R. C. S. (Eng.), Teacher of Operative Surgery, Kings College, London, etc. In four volumes. Vol. I. London: Oxford University Press.

This, the first of four volumes, covers a field that has been well handled in the past few years, in America at least by two excellent systems, and yet it will be welcomed by all interested in a thorough treatise on operative surgery, as representing the ideas of those foremost in English surgery. It has a further merit, of being "eminently practical," encyclopedic, but not tiresome with needless details. The contributors are representative of England's best and the work throughout the first volume has the characteristic that we associate with the best style and expression of British authorship.

The chapter on the "Principles and Technique of Wound Treatment" is by Lockwood, who advises practical and efficient measures. It is a little surprising to learn that he still continues the use of marine sponges, but his technique otherwise is similar to that generally employed in America. The methods of local anesthesia are given in a chapter by Houghton, which is one of the best in the book, being most thoroughly illustrative of a method that is fast becoming an indispensable attainment of every surgeon. The author has devised several infiltration adjuncts and has had much experience. Spinal Anesthesia is given a complete chapter. Burchard has contributed two sections, one on "Amputations," another on "Ligature of Arteries," which are well done, but seem too extensive and detailed for such a work. Amputations through the extremities are performed in much the same way, no matter what part is removed, and general rules would suffice in most instances. Ligature of vessels is made to include an extensive review of anatomy, which could easily be much curtailed. On the other hand, we find much to praise in the chapters dealing with "Arteriorrhaphy," "Endo-aneurysmorrhaphy," "Aneurysmal Varix," and "Operations on the Veins."

The section dealing with "Operations Upon Nerves" is most instructive, particularly on nerve suture. The removal of the Gasserian ganglion is described in the section dealing with the operations on the cranial nerves, the author describing very well a modification of the Cushing technique as that operation was done some time back. The editor also deals in an instructive and easily followed description with operations in non-tuberculous affections of the bones and joints. An excellent chapter by Legg gives the general principles and special applications of Plastic Surgery. The volume is well printed and sufficiently illustrated by good cuts.

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EDITORIAL.

A NEW RUBRIC IN THE DETERMINATION OF SEX.

If there is one subject in medicine that shows an efflorescence indicative of a perennial freshness, it is the all-absorbing one of the reasons why necessitous families are burdened with a superabundance of female children, while those who live in affluence and could well afford to have more daughters than sons, have the power to propitiate an unkind fate in some mysterious way, and alternate the female product with the male. That the matter is not altogether in the hands of Clotho, has been explained to us before by various visionaries who, by means of a special diet, were ambitious to wrest an iota of the honor of arranging the significant matter of sex from the clutches of the Greek goddess; but though we were impressed for a time with the deep knowledge of the investigators, and hearkened not unwillingly to the lure of their theories, families refused to abide by the decisions, and the petty annoyance of too many daughters went merrily on. But human ingenuity in this matter is not easily discouraged, for every now and then a new and extraordinary theory is advanced; and while it may not prove more effective than the inspired dietary vision of Professor Schenk, it has enough of the element of the novel, to add considerably to the gaiety of physicians. France and England are linked together this time in the vision of the betterment of social conditions that would happen, should families be characterized by a preponderance of sons over daughters; but though the innovative ideas were published almost simultaneously, the English author's composition* is so deeply and thoroughly informed with what might be called the very ecstasy of medical science, that the

*The Causation of Sex: A New Theory of Sex based on Clinical Materials, together with Chapters on the Forecasting of the Sex of the Unborn Child, and on the Determination or Production of Sex at Will. By E. Rumley Dawson, L. R. C. P. Lond., M. R. C. S., Eng. London: H. K. Lewis. 1909.

Frenchman's theory* is sure to be neglected as too mild to merit critical interpretation.

It would really be a difficult matter to give, in toto, all the masterly theories which at once pass into facts by the annealing process of a quick cerebration as instanced in the ratiocination of Mr. E. Rumley Dawson; but while this would be beyond our patience, and much beyond the reader's mental endurance, it behooves us to expatiate on the most vital part of the book—the one and only fact which determines the sex of the child. Hitherto, while moral philosophers were not agreed that the male parent was entirely responsible for the sex of his offspring, they did not entirely dismiss him from their reasoning on the matter; but Mr. Dawson is of a different opinion and shows, with rare lucidity, that a spermatozoon is a negligible quantity when it comes to the consideration of the sex of the child and the transmission of hereditary qualities. What mysterious force, then, is responsible in the causation of sex, or by what mental effort on the part of the female, since she alone can predestine the matter, are results achieved that will make her a popular entity, when male children are greatly desired to feed the insatiable maw of a combination of militarism and commercialism? And by what means, at our disposal, may we throw a sop to those restive sociologists, who are continually crying out against modern civilization because, forsooth, there has always been the dread with us, that a considerable number of non-earning daughters to each family must be a drag on all future prosperity? Shunning devious ways, as unworthy the clarity of the profound thinker, our author allies himself at once with the positive school of medical investigators, since he states as a fact that the right ovary is responsible for the male ova and the left ovary for the female ova, and that ovulation is an alternating process involving the right ovary one month and the left ovary the next month. Thus, by a reasoning of unusual proportions, the Gordian knot of sex determination, the tightest little knot that has ever baffled the combined ingenuity of many master-minds, is severed, and now the glad tidings may be sent forth that by careful watching on the part of the woman, she may decree whether her future child shall be a male or a female.

As is usual in books that hitch their theories to the stars, there is an entire absence of statistics; and while we do not always pin our faith on statistics, since only too often our credulity has been outraged by their gross exaggeration, they nevertheless mean that the writer is not averse from substantiating his theories by the weight of unyielding facts. Nor does Mr. Dawson take up what should prove of interest to him in his present state of receptivity—the sex of the child in those cases in

*Causes déterminant les sexes. Docteur Billon (Marseille Médical).

which an operation has caused the removal of either ovary. Surely, considering the number of times one or the other ovary has been removed, it would not be an arduous undertaking to solicit information as to the sex of all children subsequent to an operation; and armed with these data the author might append an epilogue to the present volume: in prose, in case the theories expounded were a bit in advance of healthy reasoning, but in poetry, as illustrated in its highest flights, in case any or all of the prematurity was but the forevisioning of a prescient scientist.

That a spermatozoon should be deprived of all right to interfere in the matter of heredity, is an unkind attack on its intrinsic qualities; and by limiting it to the rather inferior work as a means of impregnation, is denying it the sort of spirituality we have always associated with it, without delving deep into the subject. Even though future investigations confirm Mr. Dawson's theory that a spermatozoon does not determine the sex of the child, we intend to be firm in our belief that some of the hereditary qualities emanate from it; otherwise we shall have to give up all those brilliant ideas with which Professor Karl Pearson* has regaled us of late. And now that we are stepping briskly along the highway that is paved with all the promises and good intents of the science of Eugenics, we do not intend to recede, just because a medical philosopher of doubtful reasoning powers has seen fit to decry the high purport of a spermatozoon and fulsomely praise the ovaries.

THE WORLD'S LANGUAGE.

A problem of great perplexity is the matter—and now we are voicing the opinion of many educators—of arriving, before long, at definite results as to what living or artificial language shall best meet the demands of the many, so that not only a complete understanding among the various peoples shall obtain, but a peace of mind be effected that shall carry with it all the benefits which at present are sadly lacking when polyglot conversations of irritating characteristics are executed. International congresses which convene with a regularity that speaks well for the patience of humankind, since they are witnesses to the great disadvantages accruing from a scientific paper but half understood, are bodies of earnest men who deserve considerable commiseration; and were it in the power of any sublunary being to mend matters, by making of one or another of the living languages the effective and universal medium by

*The Scope and Importance to the State of the Science of National Eugenics. By Karl Pearson, F. R. S. London: Dulau & Co.

which advocates of scientific thought could easily convey to others all the nuances of their individual mental status, a decided step in advance would be gained. That this is almost impossible is well illustrated in an article from the pen of Professor Albert Schinz,* in which he shows quite conclusively that even so virile a language as English would be ineffective, were it possible to make it universal. And since it is a fact that as yet only a minority among us have succumbed to the blandishments of Esperanto, despite its many advertised fascinations, the subject of the impossibility of making any living language the universal means of understandable thought, is fraught with enough interest to arrest all those men, be they medical or otherwise, who, having shivered or fevered through the exasperating period occupied by the reading of a paper in a foreign language, have had the selfish utopian dream of foreseeing the world at peace one day, thanks to the introduction of their own special language.

A language is so decidedly part and parcel of one's nationality, that to displace it by another, though this other may have some advantages as regards simplicity of orthography and grammar, is taking but small account of an individual's predilections. But aside from what the individual might think, or what his deep-rooted objections to the acquirement of a new language might be, would the language itself retain its virility, if bandied about by all sorts of people with but small respect for its intrinsic beauties? Would it be capable still, after some years of hard usage, to express the fine shadings, without which its value is greatly curtailed? We doubt it, and that Professor Schinz has drawn attention to these vital points should be momentous enough to call a halt to our enthusiastic advocacy of a universal language. Again, would it be possible for a dyed-in-the-wool Russian, Hungarian or Bohemian, to make his thought clear in a language with which he has no sympathy, but which he acquires because he was democratic enough to ally himself with the Universal Brotherhood, which forges its links out of such perdurable metal that much is made of intelligibility of thought? And even in a scientific paper, national traits are betrayed and virility of language counts for something. Were it otherwise, some of the subjects would not be hearkened to for a minute; but being bolstered, for the time being, by an enthusiasm that is unmistakably national and therefore closely allied to the speech in which they were written, a certain attraction is lent them. An embryonic scientific thought, exploited for the first time in a medical congress, would be sadly handicapped, if the invigorating language which is native to the speaker, were replaced by

*Will English be the International Language?—*North American Review* for May.

a colorless linguistic medium utterly out of keeping with the nationalism of the soil from which it grew. The history of all scientific meetings has proved that new ideas are bound to meet with considerable opposition; but though a counter feeling does prevail, there is never a complete routing of a scientific discoverer or iconoclast, if the shaft is driven home. And to effect this, one's own language is the best, for after speaking it for years it is an integral part of one, and is the only bulwark that stands between the life of a new measure and its devastation, as encouraged by opponents.

Of course, all this would not work weal for those whose limited knowledge of the intricacies of a foreign tongue preclude a full enjoyment of a paper. But observation has taught us that even at medical congresses, the spirit is not all science, and that occasionally relaxation is not an ungrateful adjunct. How to achieve the latter, while the seething currents are plashed by the guttersals of some enthusiastic member of the Slavonic race, needs no comment here, for various members are quite adept in passing into a state politely known as a siesta, but which a less kindly critic than the writer of these lines would call a long sleep. But even though this untoward symptom of inattention obtains, there is no reason to suppose that these same men would lend undivided attention to successive papers, were they in their own tongue. To contend that one language-for-all would lighten our labors, when we attend medical congresses as self-appointed delegates, is a very superficial criticism of the situation; for to try to digest dozens of papers in the space of a week, though they be written in a language that is native to the listener, is really beyond the capacity of man. Hence—and here observation is again at our back to guide us on safe ground—the scientific paper droned forth in the guttersals of the Slav, is an assuagement greatly to be desired by many tired brains.

The matter of language is really occupying too much of the world's attention to-day. It is being discussed by the visionary enthusiasts,—the ideologues of the artificial languages, as if it were a thing of so little importance, that by a slight movement of the wand which each Esperantist is supposed to hold, it would fall to the ground like an old garment. In fact, so little is thought of the importance of preserving all the beauties of one's own language that even writers, who are not bitten with the disease of evolving a new language, are harsh in their criticism of the worthlessness of their mother-tongue. To cite but one instance, we have before us a book by Ralcy Husted Bell entitled "The Changing Values of English Speech," in which there is much that is closely related to what might be called the Higher Criticism of Living Languages, for this author thinks that the English language has stopped growing, is

"dead," in fact, and "probably reached its perfection several centuries ago." But though this is a scathing view, there are others whose beliefs are just as strong in an opposite direction. Among these, none better expresses just what a language ought to stand for, than does Professor Schinz, for he gets at the root of the matter by recalling to our defective memory the great intrinsic merits of the prominent living languages. "Why do old English, old German, old French appear so delightfully picturesque and graceful and crisp?" he asks; and his answer is no less effective: "Because they were more concentrated languages than our present forms." And this concentration, whether evidenced in a paper read before a literary society or a congress composed only of doctors, cannot preserve its integrity, if it is constantly subjected to the disastrous inroads arising from an unintelligent attitude, on the part of those who should think well enough of their mother-tongue, to recognize the puerility and inutility of substituting, either an artificial or another living language, for their own.

THE TRAGI-COMEDY OF CHRISTIAN SCIENCE.

In the comedy "T'en as un œil," which scored a success in Paris in 1903, a suckling influenced by advanced ideas derived from a foundling conducted on radical lines, refuses to take the right breast because in his opinion only the left breast is imbued with the necessary radicalism! In like manner, after reading the lucubrations which the facile pen of the progenitress of "Christian Science" has launched into the world of religious healing, we feel some justification in refusing all sustenance from a source that makes light of all the verities of the science of medicine, and is even more reactionary than the right breast which filled the advanced Paris child with loathing. This attitude is certainly one of narrowing latitude and might be the subject of scathing rebuke on the ground of a deprecatory stubbornness; but after a course in the tenets of physiology and pathology, the medical mind is really not in an ideal receptive mood to make much of such abstruse diagnoses as "bowel troubles," "female troubles," "kidney troubles," "heart troubles" and "rheumatic troubles," to mention only a few out the vast congeries of "Christian Science" disturbances. Of course, the defects of an early medical education, achieved before the glamor of this extraordinary philosophy dulled the special sense of sight to the gropings of the staunch advocates of correct diagnosis, may have something to do with the failure of a complete realization of the vast benefits that are ours for the asking; but trained as we are to doubt, where a grave disorder is lightly passed over, and receives only the dubious honor of being

named "a trouble," harsh criticism of our front ought to be withheld from us. That we are not completely isolated in our position as contemners of the palpable frauds of this modern vagary, the scientific criticism of the day attests; and in no instance have all its weaknesses been better exposed than in the recently published "Faith and Works of Christian Science" by the author of that unforgettable book, "Confessio Medici."

Mrs. Blake, the wife of William Blake, the poet, once said to him: "You know, dear, the first time you saw God was when you were four years old, and he put his head to the window and set you a-screaming;" and if Mrs. Blake were with us now and were a "Christian Scientist," as we feel she would be, almost the same words would be applicable to Mrs. Eddy, for according to her own account in "Retrospection and Introspection," she heard repeatedly, when a child of eight years old, a mysterious voice calling her distinctly by name—Mary, Mary, Mary—three times, in an ascending scale. What else was there for her to do after so extraordinary a performance, than to feel that her duties lay outside the monotonous grind of daily life,—in that supernal atmosphere which is the only medium for a religious healer with aspirations after a saintship. There have been other instances in history where the Mysterious Voice has been the first intimation that the recipient of this special favor had been singled out for an exalted purpose; but others were not so wise as the head of the "Christian Science" church, for they turned their backs on mundane matters in their zeal to further their sublime emotions. Modernity has never forsaken Mrs. Eddy—the modernity that keeps a watchful eye on how best to acquire the wherewithal to prevent the pressure of real troubles in the sear leaf; and from the start of her career as healer she has lavished her gifts on all who were willing to compensate her for a "science" untaught of man. As she aptly puts it in "Retrospection and Introspection": "When God impelled me to set a price on my instruction in Christian Science Mind-healing, I could think of no financial equivalent for an impartation of a knowledge of that divine power which heals; but I was led to name three hundred dollars. * * * God has since shown me, in multitudinous ways, the wisdom of this decision."

The medical schools throughout the country which are not abashed at present to receive large sums for medical instruction, might profit by closely studying the business methods of this modern mystagogue; for though in the beginning she charged only \$100 for twelve lessons, she later raised the price to \$300, and when she felt that her genius was at its apogee, reduced the number of the lessons to seven, without any reduction in the price. Of course, what Mrs. Eddy so kindly taught in the

seven lessons, covered more than a complete knowledge of what is passed on to a medical student during his four years; for each lesson was the sort that would require an ordinary medical student an eon or two to acquire, since it was brimful of all the unearthly things of which Mortal Mind cannot conceive. Nevertheless we feel that the pedagogic performances of the head of the "Christian Science" church were quite lax in one respect—a disregard of technicalities when describing distinct pathological changes affecting the various organs of the body. Hence the present day "Christian Science" characterization of all the ills of man as Troubles.

OPINION AND CRITICISM.

THE REHABILITATION OF BEER AS A DIET.

Agitations against certain articles of diet, led by enthusiasts who reap the benefits of an ephemeral fame on account of an uncompromising attitude, are only too often the outcome of the mistaken and egoistic idea that a prejudice is justification enough for extreme denunciation. Just as in this little world of ours, which revolves so noisily on its axis as judged by the fustian and blatancy of many of the little minds, mankind is uncritically divided into glorious heroes and black villains, so certain food stuffs are classed in the same enlightened and illuminating manner. But the wrangling on the subject of what people really ought to eat to propitiate their interfering friends and retain their status as sane entities, is as nothing compared with the fulminations liberally strewn about in the four quarters of the earth, when the subject of what one ought to drink is dragged out to be mauled into some semblance of a spanked and dutiful child. At no time in the history of man has there been greater animus expressed against liquor than at present; and so forbidding are the skies when the welkin rings with the daily secretion of the bitterness of narrow thought, that many of us are compelled to abide by the decisions of befogged intelligences. But a welcome turn to all this monotony has been granted us at last, for the Special Commission on Beer, appointed by the English Parliament, has reported that beer may be "eaten" without any dire effects to the organism of the unwary.

Of course American beer is not exactly the counterpart of the English product, but the decision arrived at in England is, notwithstanding this, of some value to us; and that its echoes have already reached us was evidenced at the brewers' convention at Atlantic City a few weeks ago. The decisions of a lay convention cannot be of much moment to medical men, since they are undoubtedly influenced, more or less, by a commercial *arrière-pensée*; nevertheless, in this instance, the cue for the exploitation of American beer came from a most excellent source, and as such should merit more attention than mere passing notice. The English Commission worked on the matter for months, and its judgment that beer is a nutrient, that should not be overlooked by the advanced lights in the medical profession, will be welcome to all those hitherto cowed spirits amongst us, who were but weak-kneed and lackadaisical Davids in their warfare against the Goliath of a mighty Puritanism.

An important matter to consider is whether or not American beer has as yet reached the stage of perfection which would make it an excellent adjunct to other nutritious foods. What percentage of alcohol

does it contain? and if this is arbitrary, would it not be well for brewers to evolve a standard that would place the American product in the same class with German beer, which is almost non-alcoholic? In the interests of their now somewhat new mission as purveyors of a nutrient that deserves an honorable position in our dietary list, this ought to be done, and the sooner it is effected, the less will be the prejudice. But even as American beer is now made, it is wrong to class it with whisky; for this sort of attitude betrays an ignorance of its constituent parts, and a stubbornness that refuses to be convinced of the wrong of a wilfulness to further falsehood. The manner in which Commissions go about an investigation are not always in the interests of truth; but no such charge as this can be brought against the English Commission, which by its thoroughness has freed a much maligned article of diet, from the choking tares of a prejudice imbibed by only too many from the inflammable literature of frenetic and misguided pseudo-sociologists.

LITERARY NOTE.

AMONG the new books published by Masson et Cie, none is of greater importance than the "Compendium of Exotic Pathology" (*Précis de Pathologie Exotique*) by Drs. Jeanselme and E. Rist. In the past twenty-five years, no branch of medicine has made such rapid strides as has this special branch, for the reason that scarcely a year passes without some gain in our knowledge due to improved scientific methods. This work is not only for doctors in the Colonial Medical Service, but for all who are interested in medicine, *per se*, and who are desirous of knowing the medical advances which no educated doctor can ignore. The authors, by reason of their previous studies and their long sojourn in the Far East and in Africa, are in a position to write authoritatively; and while insisting on an appreciation of the pathogenic and etiologic factors, on the part of others besides the doctor who is moved only by scientific curiosity, they nevertheless give their best thought to the study of the clinical aspect of tropical diseases and the best diagnostic methods. In regard to the latter, they show the important part played by laboratory experiments, and describe the technique with great clarity, selecting by preference the simplest methods, with a special appeal to the general practitioner who perforce must content himself with but a rudimentary knowledge of the matter. The prophylaxis and therapeutics of tropical diseases, matters which have recently achieved so brilliant a success, receive in this practical and useful work, the minutest attention. But above all other considerations the authors are to be congratulated for not indulging in that hopelessly uninteresting style of writing which is only too often the greatest blemish on a scientific work.

ORIGINAL ARTICLES.

SURGERY OF KIDNEY STONE.

By MAURICE H. RICHARDSON, M. D., of Boston.
Moseley Professor of Surgery, Harvard University.

In the course of my daily work, especially in private practice, I have been impressed, particularly of late, by the frequency of serious disaster of the kidney due to stone. When I recall how important a part in surgery the treatment of stone in the bladder was in the '70's, I am impressed more deeply than ever by the importance of stone in the kidney. The ordinary stone, excluding the phosphatic deposits of chronic cystitis, affected, as a rule, only the bladder. It was comparatively infrequent; and when operation, through aseptic methods, became safe, cutting, either through the perineum or above the pubes, became safe.

Stone in the kidney is a very different matter. The situation—in the heart of a vital organ, and that organ itself in, so to speak, the heart of the body—makes surgery of the kidney of the highest importance. As compared with stone in the bladder, its occurrence seems extremely frequent.

It is not for the abdominal surgeon to say how frequent renal stone is in general, when his opinion is based only upon the frequency of its occurrence in his practice. He can say, as I do, that it is a common occurrence in abdominal surgery to meet with cases in which stone in the kidney is at least suspected; and if, in his total of abdominal operations, 5 to 10 per cent. are for kidney or ureteral stone, it is undoubtedly true that that percentage is due to his particular line of practice or experience or reputation. Be that as it may, cases of renal stone are coming to me now in such numbers that I cannot but be impressed by their frequency.

In bringing up this subject I am influenced chiefly by the fact that many stones in one kidney or both are overlooked through error in diagnosis; and that slowly, perhaps, but surely, changes, which in a few years may prove destructive to kidney, health, or even life itself, may take place.

At a recent autopsy I saw healed tuberculosis of the right kidney. The records contained nothing that would suggest in the history, early or late, the presence of a renal tuberculosis. The pathologist, in answer to my query, said: "Oh, yes; healed renal tuberculosis is more common

that you surgeons appreciate"—a fact very interesting to me. But, so far as I know, this particular healed tuberculosis was not used at all to find out just what clinical evidence there had been of a tuberculosis which eventually healed. The patient could only be questioned, and no one took any special interest in the case except myself.

In spite of all the observations at the autopsy room and at the operating table, I feel that our knowledge of renal stone is very incomplete and inadequate from the point of view of prognosis.

And prognosis, as I have said repeatedly in connection with disease, both medical and surgical, is the thing about which we know least where we ought to know most. Take a case of acute appendicitis—have we not demonstrated beyond dispute that the prognosis cannot be accurately told in any case, and has not the medical and surgical world become convinced, therefore, that the only safe course is earliest possible operation? And in gallstone disease, is not an accurate prognosis the most important fact of all, for accuracy in prognosis depends upon accuracy in diagnosis, and especially upon accuracy in deducing from symptoms the real pathological lesion?

Furthermore, in appendicitis, gallstones, and in all diseases demanding surgical operation, does not prognosis depend upon such things as the operator's skill and experience, the environment of the patient, his powers of resistance, peculiarity of lesion, and complications in other organs? I am convinced that all these questions should be answered affirmatively.

Indeed, it is safe to say that prognosis is practically impossible of accurate formulation for one reason, if for no other—that no two cases are exactly alike. No two cases of gallstones were ever exactly alike, considering all the anatomical areas involved. Taking together the chief organs of life—thoracic and abdominal—the number of combinations which they permit, of disease and of health, is really infinite. So I repeat, in establishing the prognosis, say of gallstone disease, accuracy is impossible. One may say that the combined experience of many observers shows that the prognosis is, on the whole, good, but no man can predict that in the given case the prognosis is surely good, for that case may be the very one in which the combination is bad, and in which the fatal result is going to take place.

In the surgery of kidney stone our experience, as compared with gallstones, is small. But is the number so very small? How do we know that renal stone is not much more frequent than we have been led to expect? We do not know, except by the findings of large numbers of autopsies, as we do in estimating the frequency of gallstones. But I believe the number to be much greater than we realize, as my own recent experiences tend to prove. Renal stone often exists without our suspecting it. To illustrate, for example, the presence of unsuspected renal stone, which caused sudden and unexpected death, here is the case of Mr. K., upon whom I operated for stone in the bladder way back in the

'80's. This man died of suppression of urine in 1907—suppression of urine dependent upon stone in the kidney! Three renal calculi were discovered at the autopsy, and no one suspected in the least their presence. Had no autopsy been performed, death would probably have been attributed to acute Bright's disease.

Is stone an incident in the course of renal disease? Whatever the facts may prove to be, it seems to me highly probable that renal stone is an incident in the course of anomalies of renal secretion.

Once a tendency, always a tendency, is true in many human things. Once a tendency to tuberculosis, always such a tendency. Once a tendency to gallstones, always a tendency, I was going to say, but here we surely have a brilliant exception; for if clinical evidence has convinced me fully of one truth, that truth is that the thorough and complete removal of gallstones is permanently curative, for the operation not only removes from their nidus the gallstones themselves, but it frees that area from the local causes of gallstones—microorganisms. Is this likely to be so in the case of renal stone? To apply the same reasoning that we apply to gallstones, we must assume, first, that renal stones form upon bacteria; secondly, that the operation removes them all; thirdly, that, with the stones, all bacterial elements are thoroughly and forever removed.

But it has always seemed to me in gall-bladder surgery that there are bacterial elements unavoidably remaining in the gall-bladder and in the ducts. When the surgeon's incision into the biliary tract is closed so as completely to prevent the passage of fluids—whether bile or pus—these fluids must remain in the biliary tract, whence they can be thoroughly removed only by the biliary stream. Now, it is against reason that the final closure of the wound, say in the gall-bladder, leaves on the gall-bladder side of the sinus a perfectly normal, healed surface without microorganisms of any kind, especially after operations upon infected gall-bladders. And so in renal surgery, it is beyond belief that the moment the wound ceases to discharge urine—when a kidney is cut open or resected—no microscopic particles remain in the urinary tract to become the nucleus for future deposits.

Such a conviction, even if without sound foundation in fact, seems to me worthy of consideration as explaining the re-formation of calculi in the affected ureter or in the bladder; but it does not explain their formation in the unaffected kidney.

We must, I think, come to the theory that I have already mentioned, namely, that renal stones are "an incident in the course of anomalies of renal secretion"—the result of a tendency of the urine toward the formation of crystalline aggregations while it is yet in the urinary passages.

The formation of urinary stones upon microorganisms is a very attractive theory, and one that should be capable of easy demonstration.

The first fact to be considered is that stone may exist in the kidney without arousing any suspicion on the part of the patient. In this respect renal stone is very much like biliary. It is doubtless true that renal stone, like other stones, causes little if any trouble until it either gets impacted, and thus excites duct spasm, or until its rough surface causes an ulceration with infection. I do not refer at this time to those calculi which are deposited in infected urines, but rather to the stones which crystallize from an excess of uric acid or oxalate of lime. There are no symptoms in the patient's feelings calling attention to the kidney, either in his comfort or want of it, or in the urine as he is used to observing it as normal—no pain or discomfort, no blood or pus.

The renal stone may exist, as I say, without being suspected; it may be contained in the kidney without being perceived even when the kidney is actually in the surgeon's hands. I have examined several thousand kidneys with my hand in the abdomen. I have detected what seemed to me distinct abnormalities; but I have never, except when the diagnosis had been made or suspected, felt a stone in the kidney in the course of my usual routine examination of the abdominal viscera. A stone may therefore exist in the kidney, not only without arousing any suspicion on the part of the patient, but without being detected by the surgeon with the kidney actually in his hands.

In a recent case I found a stone in the left ureter only because the *x*-ray in the hands of a skilful man, Dr. Percy Brown—with certain significant symptoms—suggested the possibility of a stone there. I even gave up the search, and attributed the symptoms to an abnormal appendix, until I happened to strike upon the calculus by renewed search and by exposing the ureter.

In exploring the biliary tract with the fingers in the course of abdominal operations I find calculi very frequently in the gall-bladder and cystic duct. Sometimes I have found one or more in the common duct, and that, too, with no history of biliary colic or other discomfort.

But, as I say, such a discovery in the genito-urinary tract, especially in the kidney or ureter, is in my experience most unusual. Even when there is a strong suspicion of stone, the surgeon is only too likely to be unable to feel that stone.

It would seem, from these facts, that stone in the kidney or ureter is very infrequent, but such a deduction is not warranted. Judging from the number of cases in which the question of renal stone arises, the number is by no means inconsiderable.

Upon the cadaver it is difficult to detect differences in the health of kidneys by the sense of touch alone. Indeed, I do not know that the pathologist ever makes such observations. The surgeon must depend for his diagnosis wholly upon the sense of touch.

Palpation of the abdominal viscera at the autopsy table, through an incision admitting only the hand, is an extremely useful means of teaching important facts of palpable disease. In many diseases and in

many organs the evidence is about as good upon the cadaver as upon the living body; but the solidification of the paranephric fat interferes seriously with palpation of the kidney. I am not sure that the cold kidney is not very different from the warm one. In autopsies made shortly after death the changes dependent upon cold would not interfere with a palpation closely resembling that during life.

The surgeon who operates within the abdomen will quickly see the need of recognizing, beyond mistake, states of health and disease in the abdominal viscera. However much he may be disinclined to believe what I am here saying, let him be confronted by a tumor of the right kidney and a doubtful efficiency of the left, and he will be forced to admit the importance, not to say the indispensability, of being able to recognize with the finger tips not only the nature of the right kidney tumor—whether demanding nephrectomy or nephrotomy—but the efficiency of the left kidney—whether it is able to carry on an adequate elimination of urine in case of nephrectomy of the right.

Such a question may arise any day, and the surgeon will not always be able to rely upon ureteral catheterization; indeed, he should never rely absolutely upon it.

Take a recent illustrative case. The diagnosis before exploration is not absolutely positive, though it favors renal stone. The symptoms have been pain in the region of the right kidney, and there has been some evidence of renal irritation, as shown by the examination of the urine. The *x*-rays have not been positive.

The surgeon exposes the right kidney, but is unable, by palpating it, to feel a stone. He next separates the kidney from its attachments, so that he can get in his hand—fingers on one side and thumb on the other. He can compress the renal pelvis between the thumb and fingers in such a way that he could detect a pin head. He feels nothing abnormal either in the pelvis or in the upper portion of the ureter. He then palpates the renal parenchyma, and feels nothing wrong there.

He can be sure that no stone is present in the ureter or renal pelvis, but can he be sure there is none in the depths of the kidney tissue? He certainly cannot. To make as sure as possible, he delivers the kidney as far as practicable, so that he can take it in both hands. He palpates in every direction, and still feels nothing. Is he still absolutely sure? By no means. What next?

If one portion of the kidney seems thicker than another, he may probe this area with a fine, sharp needle. He encounters nothing. What next? Nothing remains but to cut directly into the renal pelvis, unless the surgeon is to abandon the operation as a fruitless exploration. Suppose he cuts into the pelvis through the parenchyma? He subjects his patient to a bloody, formidable, and but too often useless procedure.

I have been in this position a few times and have seen others in it. I have been fortunate in not losing patients after so severe an operation, but I have seen a strong young fellow die miserably as the result of it

at the hands of a skilful operator; and my next case may prove as unsuccessful.

But what is the surgeon to do under such circumstances, when the proper course to follow depends entirely upon the reading of his finger tips? Except for the interpretation of brain conditions by the sense of touch, I know of no anatomical changes so hard to recognize by the sense of touch as those of the kidney; and cerebral conditions which for recognition depend upon such gross observations as those of the exploring finger are indeed discouraging, and should hardly be mentioned in comparison with diseases of an organ like the kidney.

In many, probably in most, renal cases the surgeon will be able to tell just what he feels. Take, for example, a lobulated kidney, three or four times as large as normal, bulging with fluid, in which large stones can be felt. Such a kidney is the seat of pyonephrosis, dependent upon stones or causing stones. But may it not be some other fluid? My last case felt like an abscess of the kidney with stone. It proved to be stone in a bloody cyst. In this very case the question of extirpating the kidney—it was the right—depended upon the diagnosis—whether tuberculosis, simple abscess, hemorrhage, or neoplasm, and especially upon the condition of the left kidney, which seemed to me small and hard. I do not care what the catheterization might have shown in this case, it would never in the world have given such valuable evidence as I got through a median incision with palpation of each kidney—an examination in which every assistant took part. We were able to say that there was something in the right kidney that demanded exploration, and that the condition of the left made extirpation of that right kidney inadmissible unless absolutely unavoidable. (*Office Records*, vol. lxxviii, p. 79.)

I exposed the kidney through my muscle-splitting method, delivered it, aspirated it, and finally resected it, saving three-quarters of its bulk in perfectly healthy renal tissue. And the patient made a good recovery.

The exploration of the kidneys by the hand is, in my judgment, indispensable in renal surgery. A median incision which makes such an investigation possible is, I believe, fraught with as little danger as ureteral catheterization, especially in the male, and adds information of the utmost value which can be obtained in no other way.

In most cases the diagnosis is positive enough to require but one cut—that over the affected kidney—so that the median incision is unnecessary. When the kidney affected is doubtful, I take the median line first, and the second cut, if any, may then be made intelligently.

The first thing, then, the most important that the surgeon can bring to the operating-table in kidney cases, is a good working knowledge of the anatomical conditions of the living kidney, as interpreted, first, by the sense of touch; and secondly, by the sense of touch and sight.

The kidney is a difficult organ to get a clear idea of by the sense of touch alone; yet one can detect any marked changes in size, situation,

and consistency. To detect a stone in the kidney is, as I say, a measure of great difficulty and uncertainty.

A curious condition I have lately found in which there seems to be an enlargement of the renal pelvis on both sides. I was not sure that there was a hydronephrosis, and yet the pelvis was certainly much larger, broader and longer than normal. The finger tips could be pressed into the region of the calices, and the renal parenchyma seemed less bulky than usual. There were no pathological changes in the urine, and there were no symptoms. I noted these variations from the usual with considerable interest.

In pathological cases the interpretation of enlargements is difficult. One finds in pyonephrosis sometimes an enormously enlarged kidney with sacculations containing pus. The whole kidney is a bag of fluid of irregular outline; a sacculated, purulent organ, in the contents of which one sometimes can detect, with the fingers, calcareous masses. Palpation of the ureter emerging from a diseased kidney is impracticable when the ureter is in health. A ureter perceptible to the fingers is an unhealthy ureter, and is usually tuberculous.

It is not my intention at this time, however, to go into details of abnormal anatomical appearances as demonstrated upon the living, except as it elucidates the subject of renal stone.

There are two pathological variations in which palpation is of the utmost importance—the renal stone with trivial change in the renal anatomy and physiology, and the renal stone with complete kidney destruction, whatever the bacterial elements which have accomplished that destruction.

In many cases the secreting power of the kidneys will have been determined with more or less accuracy by means of ureteral catheterization, and yet I have never learned to look upon this manner of investigation with absolute confidence, nor as a means without considerable danger.

The urine examination will doubtless have settled the question of renal tuberculosis, so that the surgeon will have much information about the kidney when he first reaches it with his fingers. Relying on the fingers alone, no examiner will be able to express a positive opinion as to the exact nature of the process of renal destruction, though he will get a very good idea of its extent. He will be able, in suspected stone, to tell when he really *does* feel the stone, but he will not be so certain when he does *not* feel it. It is much easier to rely upon a positive feel that there is a stone than a positive feel that there is not. When a surgeon once gets the sensation of renal stone through the renal pelvis or parenchyma, he knows it just as positively as he knows when he gets the feel of a gallstone. When he thinks he may be feeling one, but is not sure, he becomes absolutely uncertain as to the reliability of the finger tips.

Hence the grave uncertainty with which the surgeon cannot but be depressed when the history, clinical symptoms and *x*-rays all point to a

stone which he cannot be sure he feels, and to demonstrate the presence or absence of which requires a bloody dissection of much danger.

This investigation of the comparatively normal kidney containing a possible stone is a matter of the first magnitude in renal surgery. The operator must, by thousands of observations, accustom himself to the feel of the normal kidney in life. There is no other way of educating the touch, and he who practices this touch the most faithfully and frequently will be the one to interpret most accurately and fearlessly the reading of his finger tips.

I am surprised every day that so little attention is paid by operators to the education of the touch in this regard. We all know perfectly well that the guide to the lesion and the indications for operative measures are what the fingers feel, aided occasionally by other means. All regions not easily accessible to the eye must be studied with the fingers. It is safe to say that very few abdominal tumors are diagnosed by the sense of sight. Even if they are large and visible, as ovarian cysts are, the diagnosis that really influences the operator is that of parts which cannot be seen. Three cases within a week have shown this: Mrs. W. (vol. lxxix, p. 49), with a large benign tumor presenting, had cancer of the pelvic portion; Mrs. H., with a multilocular ovarian cyst, had cancer infiltrating the depths of the pelvis, invisible and inaccessible without removal of the bulk of the tumor; and Mrs. M. (vol. lxxviii, p. 153), with a forty-pound multilocular cyst which had unknown possibilities of malignancy until after thorough extirpation.

Renal surgery is an important part of abdominal surgery, and the surgeon whose experience is large is best educated to perform it—not in the narrow specialty of genito-urinary surgery, but through the broad experience, first, of general surgery, and later of abdominal surgery.

In no other way can the surgeon take that broad view of renal lesions and their appropriate treatment. General surgery, with wide experience in medical diagnosis, will best give, I am convinced, that broad grasp of any special abdominal disease which will enable the surgeon to apply a wise course of treatment, whether conservative or radical.

And renal surgery—as Fenger said—should be whenever possible radically conservative. Risks are justifiable to save the precious secreting tissues of the kidney when risks are not justifiable to destroy it.

When the surgeon examines with his fingers kidneys which show unmistakable changes in shape, size and consistency, he must determine what the lesion is, what it means to the patient, and what it demands in order that the patient's health may be, with the least risk, permanently restored. When there is little deviation from the normal found, he will have had perhaps evidence more or less reliable from chemistry, bacteriology, *x*-rays and ureteral segregation.

I admit my personal feeling of responsibility when confronted by the problem of anatomical diagnosis on the living patient, with kidney fully exposed to manual palpation.

What, in advanced cases of renal stone, does the surgeon feel; what evidence indicates nephrotomy; what nephrectomy; what no operation?

This question expresses the gist of the whole matter. Would that it could be answered as easily as it is asked.

The surgeon must not only ascertain accurately with his fingers the extent and nature of the pathological condition, but he must, upon that demonstration, base an accurate prognosis of the future of that kidney under efforts to conserve what of it is good, as well as the prognosis of the patient under the proposed local operation. And furthermore (as I say elsewhere), he must lay down the prognosis as influenced by his examination of the other kidney, plus the probable effect of the proposed operation.

The advanced changes by which the kidney is practically destroyed, or by which enough of valuable tissue is left to make conservatism worth while, cannot always be told with accuracy, even with the kidney in the hands. I regard a sacculated kidney as practically worthless; a kidney with a single sac, though it occupies a third or a half of the kidney body, as worth trying to save, if there is reason to think that the pelvis and ureter are free, as determined by ureteral investigation. Yet it will not do to assume, if such a kidney is giving no urine through the catheter or the ureter, that it is incapable of valuable work and more or less restoration of function, for the ureter, even if blocked, may by drainage become patent.

The trend of thought and study should be toward conservatism. In trying to explain the loss of renal function, we should make every effort to find an explanation which by conservative operation will permit restoration of that function.

The one thing to remember in palpating the kidney just prior to operating—especially before doing a destructive operation—is that there is every reason for trying to save the kidney; that the burden of proof is on him who would destroy rather than on him who would conserve so valuable an organ.

Some ten years ago I removed a tumor of the left kidney, after thorough palpation of the right. There was what seemed to me a sarcoma of the left kidney. The right kidney was not exactly normal to the touch, yet it was not especially abnormal. I removed the left kidney, which proved to be a shell of renal tissue—good for work, what there was of it—about a hydronephrosis. The patient died with anuria. Autopsy showed the right kidney to be also a shell, but smaller. It was a case of double hydronephrosis not recognized by the touch. The operation was strongly contraindicated, and was, in fact, fatal because it destroyed just that amount of renal tissue which enabled the patient to live. With both kidneys partly disabled, life was possible; with one kidney removed, life was impossible. Kidney catheterization in skilful hands would, I think, have saved the patient from the error of judgment. This was, however, before the day of ureteral catheterization.

Catheterization of the ureters is a highly specialized procedure, especially in the male; and its value to the surgeon may in a general way be gauged, I think, by the practical use to which one in active surgical practice puts it.

I have observed the methods and the results of cystoscopy and of instrumentation of the ureters in the hands of men who have made special study of the subject, and whose skill is great. My opinion is that this method of investigating the kidney is useful only in the hands of highly trained men who have devoted an enormous amount of time to the practice of its technique, to the recording of their observations, and to the verification of these observations by operations which give abundant opportunity for visual and manual examinations and control.

I cannot but regard even so comparatively simple a measure as cystoscopy, except in the hands of the most highly trained expert, as one which is not only valueless, but actually misleading. Even in the hands of such men, instrumentation of the ureter I believe to be an operation of danger. I do not accept efforts of the very best without reservation; and in every case, no matter what the expert report, I feel constrained to verify with my own hands and eyes the findings of ureteral investigation through the bladder. Right or wrong, through abundant experience with my younger colleagues, who make these examinations with extraordinary skill, I would never remove a kidney without actually feeling of the other one for information which is indispensable, and which can be got in no other way. If, then, I have been brought by abundant experience to this conclusion, and if this conclusion is a sound one, what are we to do about ureteral catheterization and cystoscopy in renal surgery?

Cystoscopy will, with very slight risk, show what is coming from an affected kidney—pus, blood, or nothing at all abnormal; catheterization will tend to show the condition of each kidney;—with the results of manual examination, it may be of great value. A kidney, for example, which the catheterization shows to be healthy, will be proved healthy by the actual feel of it; a kidney which is pronounced normal may be all right and it may not. If the manual examination confirms the instrumental, all is well; if it does not confirm it, let the surgeon be on his guard.

In tubercular cases I would forbid ureteral catheterization under all circumstances.

In considering the symptoms of renal stone, we have, first, the clinical picture of renal colic in which the pain is excruciating—an agony unbearable—the patient writhing in torture, with reflex signs in the expression of the face, the cold perspiration, the cold extremities, the accelerated pulse. In the male there is in many cases retraction of the testicle on the affected side, with pain shooting down into it. Locally there is tenderness, and a soreness that persists some days after the successful passage of the stone to the bladder. I have seen, in addition to these local and classic signs, distention of the abdomen, which, with

tympany and vomiting, has suggested a peritonitis. One must, indeed, look out for a renal cause in some forms of suspected acute general peritonitis.

The urine often contains blood enough to make its presence conspicuous to the eye; if not, the microscope will show red corpuscles and other signs of renal and ureteral irritation. Altogether the picture is clear and unmistakable.

In the present paper I am considering, however, not so much the typical case as those comparatively rare ones in which strongly suggestive histories and signs are wanting. I am considering rather those cases which are diagnosticated after a prolonged study suggested only by a suspicion; for many a stone will be found, once the symptoms suggest it—no matter how slightly. Just as the bulk of gallstone surgery comes to-day from histories which even ten years ago would have excited no great comment, so to-day, as I fully believe, the early and brilliant surgery of renal stone is going to depend upon lines of investigation suggested by very indefinite symptoms.

To show you the truth of this prediction, I have only to bring forward cases of renal and ureteral stone treated by appendectomy; cases of renal stone treated for gallstones, for gastric symptoms, for neuralgias, indigestions, intestinal colics. I may be widely prejudiced by the numbers of cases that really have drifted into my office, but when two or three patients have come in a single afternoon, I cannot but wonder whether renal stone is not really a much more frequent disease than we have usually thought.

Renal stone, like gallstones, speaks first to the patient and in a way which may drive him to the physician, or may excite only a shrug of the shoulders and a call for a plaster or some medicine for rheumatism. The first and most important call upon the patient's attention is some attribute of that broad word *pain*.

The pain of renal stone I cannot as yet speak of with that confidence which a vastly larger experience in the diagnosis of gallstones has given me. Nevertheless, I can in a hundred cases, more or less, give you some idea of my meaning when I say that stone in the kidney makes known its presence sooner or later by symptoms of irritation described by the patient in some expression meaning pain. That expression may be a transitory and trivial discomfort, or it may be an unbearable agony; it may be a heavy, solid, unending pain; it may be a nauseating distress. It may increase slowly or quickly to its acme; and it may subside in the same fashion. The acute, excruciating pain of a stone engaged in the ureter may likewise begin instantly and without warning and persist in paroxysms of indescribable severity. The engaged stone not successfully pushed along by ureteral spasm will halt where it becomes first impacted, and the painful and unsuccessful spasm will give way to a dull, deadly grind, which in turn will slowly disappear, with the occasional recurrence of subsiding duct spasm. When the stone is fastened ir-

remediably in its ureteral nidus, its presence will be made manifest by pains of varying character and severity.

Stones in the kidney, according to shape, size, situation, roughness and the like, will in theory at least be responsible for symptoms only when they cause irritation with or without muscular spasm, with or without infection of the urinary tract. I am not considering at present stones which are formed as the result of infected urine, but stones which are sometimes the cause of infected urine. What these symptoms are can be determined only when we know surely that stones are present. We know, of course, that that one great sign is pain of some sort; but what kind of pain to expect with certain shapes, sizes and situations of stones, we do not know; nor can we tell by the kind, situation, extent, persistence, onset, cessation, or other attributes of the pain, just what the shape, size, situation and other attributes of the stone may be.

The signs of irritation, then, are subjective feelings of discomfort, from the most acute and uncontrollable pain to a hardly noticeable malaise.

Constitutional signs may or may not be present. It is safe to say that fever has a grave significance in renal stone, for it means changes of far-reaching importance in the renal pelvis. Fever not only confirms the presence of suspected stone, but it adds the greatest possible weight to the indications for treatment. I was inclined to wait and study out my lesion in a case of renal stone (vol. lxxviii, p. 75) until I found that there was a daily temperature of 102° to 103° . The diagnosis was confirmed by the x -rays, but I wished to follow the clinical course for a week or two. There was so much fever that I deemed this course unwise, and advised immediate operation. The patient declined to follow my advice, as he had declined to follow Dr. Jones'. The subsequent history showed spontaneous recovery.

This patient had a severe attack of pain, with rapid pulse and temperature of 102° . He was in bed about twenty-four hours. He has been well ever since he recovered from this attack, which was probably ended by the passing on of the stone.

That there may be a transitory fever which does not have a grave significance, I have no doubt; but the irritation of stones in the renal pelvis means, sooner or later, a destructive pyelitis.

The symptoms of the greatest importance are those found in the urine. The commonest of all is blood, either enough to give a distinct bloody tinge or to fill the slide with red corpuscles. With blood there will be found pus corpuscles, and such crystals as, on the chances, compose the stone—uric acid, oxalate of lime, and the like.

Long before the x -ray examination is made, the surgeon's attention will have been attracted to the kidney as the source of renal pain. The x -ray will show a stone, surely or doubtfully, if one is present that casts a shadow.

The physical examination in suspected stone will seldom reveal any sign of importance, unless changes have taken place in the kidney which increase greatly its size.

Once the attention has been drawn to the kidney as the source of symptoms, the diagnosis of stone is easy, provided the stone can be shadowed by the x -ray. When, for any reason, but chiefly from a composition which throws no x -ray shadow, this means of demonstration fails, the diagnosis is not always easy. I have made many correct diagnoses with the aid of the x -rays, some in spite of it, and a few against its evidence. It is well, therefore, first to consider the diagnosis of renal stone as if the x -rays were unknown.

We must weigh first and most carefully the evidence of pain. While it is true that a stone may exist with little if any pain, yet in the absence of pain no stone would ever be suspected by the patient or by the physician, unless something decidedly abnormal were discovered in the urine. Hematuria would surely attract the patient's attention and bring him to the physician. Any unusual deposit, color, or consistency might start the train of investigation. Whatever the source of the patient's anxiety, the physician, seeking for a cause of urinary changes, would last of all suspect stone were pain absent.

The significance of pain in general affecting the kidney or the ureter, and later perhaps the bladder, lies in its character, its mode of onset, its extent and breadth, its way of stopping, the means necessary to overcome it, its effect upon the patient. The weight to be given pain depends upon the accuracy with which it is observed, the manner in which it is described, and upon the patient's powers of bearing it. Any discomfort persisting in close proximity to a kidney should excite a suspicion of renal stone, especially in the left abdomen, where there is neither appendix nor gall-bladder to confuse.

The only pain which will be characteristic enough to indicate a positive diagnosis will be the awful spasm of renal colic. The less like renal colic the pain, the less significant of stone that pain.

Tenderness is a symptom which confirms the localization of pain. Pain always in the same spot, and tenderness always in the same spot, are two very telling symptoms. Here again is a close analogy between the gall-stone and the renal stone. Tenderness along the course of a ureter is the rule after the passage of a calculus; and when the stone is impacted, the tenderness is at once localized over the spot and remains there. Tenderness is present in all the later organic changes in the kidney due to stone.

The significance of tumor is of the first importance, for with a diagnosis between gall-bladder, kidney and appendix the discrimination will be positive, and usually easy by palpation of the tumor alone. Indeed, so easy is the differentiation that I do not intend to spend much time in considering so plain a subject. Pain, tenderness, perceptible gall-bladder, mean gallstones. Pain, tenderness, tumor of the kidney, mean

kidney stone; the same, with a tumor in the appendix region, means appendicitis.

But does it always mean this? It does not, and it is here where skill in diagnosis, based upon experience, comes in. It is not always possible to tell the difference between a gall-bladder and a kidney, though the problem is usually easy. Nor is it easy always to tell that a tumor in the right iliac fossa is appendix, for it may be an impacted ureteral stone. Nor can you, in acute pain and tenderness, with an apparent gall-bladder enlargement, be always positive that it is not a high appendix. I have seen several errors of this kind, and I urge extreme care in studying the case from all sides, and not being content with a diagnosis based, as I have based it thus far, on pain, tenderness and tumor, without considering other signs.

A diagnosis is, however, strongly indicated by pain, tenderness, a tender and enlarged kidney. Is it strong enough to base a sure indication for operation? It certainly is not, without study of the urine, which under careful examination ought to confirm or deny the opinion of offending renal stone. I regard bloody urine as pathognomonic of renal or ureteral stone, when there has been pain, with or without tenderness in the kidney or along the ureter. If there are only a few red blood corpuscles in the field, I regard the fact as one of great significance. Pus with blood indicates renal irritation but of longer duration, though the pus may come from some part of the urinary tract unaffected by the stone.

In cases of advanced renal destruction, there will be only the abundant pus of pyonephrosis, the diagnosis of which—whether calcareous, tubercular or of other nature—exceeds the scope of this communication. Suffice it to say that the observer will be on the right track when he finds abundant pus with an enlarged kidney, to apply the final and most important test of all—the x -rays. The diagnostic value of the x -rays cannot be exaggerated in the great majority of cases. When the x -rays are in the hands of skillful and experienced Röntgenologists, a positive opinion that stone is present outweighs any amount of negative evidence.

I have not always felt in this way, for in the beginning I was willing to take the chances against the diagnosis, even with positive x -rays. And I was successful so many times that I began to feel a certain contempt for an x -ray diagnosis. I have been convinced in the past year that the x -rays in the hands of the expert are always *just what he says they are*. And when he is positive, I feel positive enough to explore a kidney in which I feel nothing. When the x -rays are negative, however, and my own diagnosis positive, I am inclined to explore in spite of the findings of the x -rays, especially in view of the fact that stones of certain composition throw no shadow.

Other things besides the shadowless stone seem to make the x -rays unreliable—the thickness of the abdominal wall, the condition of the bowels, and the like. My own guide to the interpretation of renal

symptoms, when the x -rays are doubtful, is the pain, tenderness and urinary signs. When there are signs in the kidney, the diagnosis is all the more positive. And when my diagnosis is so positive as to conflict seriously with the evidence of the x -rays, there is pretty sure to be a renal stone which does not throw a shadow.

In a word, then, the diagnosis of renal stone rests upon expressions of pain. Pain suggests stone; tenderness makes the suggestion stronger; blood in the urine strengthens the diagnosis enormously; an objective sign like a tumor makes the diagnosis still more sure, though it adds the element of neoplasm, which may obscure the diagnosis or throw it out entirely. Finally, the x -rays prove the presence of stone by positive evidence, though they cannot disprove it by negative. Ureteral catheterization I should never employ for diagnosis.

The *indications for treatment* in suspected renal stone are, I think, quite clear in the ordinary unilateral case. Indications are based upon the prognosis of renal stone left to itself, and the prognosis of operation for its removal. As I have already said, the future of a kidney containing a stone in its parenchyma, its pelvis, or its ureter, is distinctly serious. No renal stone was ever yet dissolved by medical treatment. Once a stone has begun to crystallize, it is only a question of time when the affected kidney will be totally destroyed; and that destruction, usually slow, will be attended by suffering and disability to the end.

The prognosis of operation for removal is in the beginning good; the earlier the operation, the greater the safety, with this exception, that nephrotomy through young and healthy renal parenchyma is more bloody than that through the shell of a pyonephrosis. Moreover, the other kidney has slowly assumed the duties of double excretion. But the prognosis for cure with a good resulting kidney is infinitely better with the early operation.

Operation is therefore indicated in a hopelessly impacted stone—one too large to pass into the bladder and out through the urethra. The indications are modified by the condition of the other kidney. The question of operating upon a single kidney demands a special consideration beyond the scope of this paper.

Operation is contra-indicated on general principles when there are other serious lesions of heart, lungs or the kidneys themselves. Then "half a loaf is better than no bread"—a livable life is better than no life.

As to surgical treatment, I do not intend to go into operative technique in detail. I have long practiced a method of my own—I do not know that it is original—of approaching the kidney through a muscle-splitting incision in the flank. I am able to separate, and deliver into easy manipulation, the ordinary kidney. I palpate with extreme care, and, if necessary, incise the renal pelvis through the parenchyma. Best of all, I cut directly through the pelvis itself, at its lower edge usually, and explore with eye, finger and instrument the pelvis, calices

and ureter. This cut I close effectively with fine sutures, and the bloodless operation is finished. When pelvic incision is impracticable, I go through the kidney tissue, but I find it fearfully bloody. I close the opening with catgut or leave a drain; or pack with gauze.

The results are overwhelmingly good as to immediate prognosis.

In the treatment of kidneys containing one or more stones the chief question to consider is whether to remove the stone by simple incision, or to resect the kidney, taking out that which is bad and leaving that which is good, or to remove the organ *in toto*, with as much of the ureter as seems affected.

This question, as I have said, is one of interpreting accurately living pathology. Such interpretation is, I repeat, a matter of practice, of examining repeatedly hundreds and thousands of times living kidneys in perfect health, and living kidneys in more or less extensive disease. And when the question has been decided as accurately as it can be while the kidney is still in the body, shall the leaning be toward conservatism or toward radicalism? After removing the stones, shall we remove also the kidney, or that part of it chiefly affected, or shall we give the kidney a chance to heal and to make what contribution it can to the general bodily welfare?

I must admit again my adherence to Fenger's splendid principle of saving, by strenuous effort, all of the "royal tissue" of the kidney possible, and I must add my voice to favor, whenever possible, conservative methods. But, at the same time, I am sure that the decision between destruction and conservatism requires an experience and a knowledge which few possess. At present the discrimination between the pathology which invites conservatism and that which demands destruction is an extremely nice one, beside which the decision for or against extirpation of the gall-bladder is crudeness itself.

I have saved kidneys which ought on the spot to have been sacrificed, and which later I was obliged to sacrifice. One of the patients suffered irreparable damage by delay, the other was no worse for the delay.* I have in the second case the great satisfaction of knowing that I did my best to save the kidney; but had the patient become generally tuberculous, like the first one, I should have regretted it all my life.

These two cases illustrate, however, the difficulty of the decision. I have several patients now whose kidneys I saved, and whom I am watching with misgivings for signs of additional trouble.

And yet the truth must be that kidneys are capable of conservation; that a half or a third of a kidney must be worth saving; that there is no more need of sacrificing the whole of a kidney when a part only is diseased than there is a similar necessity in any other organ.

My plea is for conservatism when there is a clear pelvis and ureter,

*I was mistaken. When this was written she was at death's door, as I supposed, with hopeless tuberculosis; she is now in splendid health.

and when the disease is not tuberculous—provided always that there is enough sound tissue left to make the effort worth while.

The ultimate results are, however, beginning to disquiet me. The chief source of discouragement lies in the recurrence of stone, either in the kidney from which a stone has been removed, or in the second kidney after extirpation of the first. I do not see how we can answer fully and satisfactorily our question as to the frequency and cause of recurrent renal calculi until our experience has been multiplied a thousand fold. For myself, I believe that the coming treatment of renal stone is an immediate removal by operation as little injurious to the renal parenchyma as possible, and by as clean and brief operations as possible.

Whenever the least question arises as to the condition of the other kidney, I believe that the incision should be carried through the peritoneum, so that its condition may be determined by direct palpation.

The deliberate breaking into the peritoneal cavity in an operation which is sure to be accompanied and followed by more or less escape of urine, sometimes septic, has always added, in theory at least, a menace which can easily be avoided by making the operation strictly extraperitoneal. But in nephrectomies I have made it an invariable rule to do this very thing, in order that I might determine beyond the shadow of a doubt the presence and state of health of the other kidney. In many there has been extensive soiling of the field by the pus of the infected renal pelvis, and yet I have seen no cases of general peritonitis follow.

There is much to be learned concerning the surgical diseases of the kidney, and the road for improvement and knowledge lies, as I have here indicated it in renal stone, along the path of the general practitioner into whose hands the earliest symptoms and treatment of the disease is sure to fall.

DIAGNOSIS AND TREATMENT OF EARLY CASES OF
TUBERCULOSIS.*

By LAWRENCE F. FLICK, M. D., of Philadelphia, Pa.

Tuberculosis is probably always primarily a lymphatic process. As such it cannot be diagnosed except by reaction. Occasionally the lymphatic glands manifest the presence of the tubercle bacillus by enlargement. It is possible, however, that when this happens there is mixed infection and that enlargement occurs only when mixed infection exists.

Diagnosis of tuberculosis of the lymphatic tissue when there is no, or little, enlargement of the glands, is impracticable. The condition is not a disease in the ordinary sense of that word, since it produces no discomfort and no interference with the ordinary pursuits of happiness.

Tuberculosis of the lymphatics may produce changes in physiological function and in the form of the body. These changes do not set up disease, however, in the ordinary sense of that term. Underweight relative to height, hypertrophy of the lymphatic tissue in the mucous membranes, bad muscular development and various nervous symptoms, may be due to it, but the relationship between it and the condition is not recognized.

Immunity, no doubt, frequently develops in these mild forms of tuberculosis and recovery takes place without the process having been discovered. These are the recoveries which leave earmarks found at autopsy upon deaths from other causes and help to swell the number of implantations of tuberculosis usually recorded.

The form of tuberculosis which most concerns the physician, is lung tuberculosis. The lungs are most frequently the seat of the tuberculous process next to the lymphatic system, and usually the first in which invasion of parenchymatous tissue occurs. This is because the lungs are most exposed to implantation when tubercle bacilli pass from the lymph into the blood. The lymph which goes into the blood all passes through the lungs before it goes into any other part of the body and the lungs are apt to strain out the bacilli which may exist in it.

The apices of the lungs, along their posterior pleural border, probably are the primary seat of lung tuberculosis. Probably both sides are implanted at the same time, but usually one side only has a successful growth for the time being. As a rule this is the right side. The first growth is usually very small and does not give rise to symptoms which

*Read before Section II. of the International Congress on Tuberculosis in Washington, in October, 1908.

attract attention. This is the real incipient stage of lung tuberculosis, the stage in which it would be most profitable to find the disease. Unfortunately, it is not often found in this stage.

The discovery of tuberculosis in this stage is possible but difficult. The chief obstacle in the way is the general ignorance upon this subject. The people at large have an idea that tuberculosis cannot exist without violent cough, sweats and emaciation and the medical profession, unfortunately, still looks upon everything short of a fatal condition of the lungs as a mere cold. With the mind preoccupied with erroneous ideas, both by the laity and by the profession, tuberculosis of the lungs is not looked for until health is seriously undermined.

For the diagnosis of tuberculosis, when the process is still limited to the outer border of the lung and the infiltration covers a small area, the mind must be alert and follow every clue which arouses suspicion. If a person is in ill health at all, if he deviates from the normal in weight, in color, in strength or in his physiological functions, tuberculosis should be looked for. If the history of exposure to the disease exists, even though the general health be good, it should be looked for. In this connection one should bear in mind that early tuberculosis of the lungs may produce symptoms and may not produce them. If symptoms exist, those symptoms should be followed out until a logical explanation of them has been found. If a history of tuberculosis exists and there are no symptoms, a searching investigation should be made until the existence of the disease can be definitely excluded. In this regard nothing should be taken for granted.

The subjective symptoms in these cases may be an occasional cough, hypersecretion of mucus in the respiratory tract, sometimes loss of appetite, a feeling of malaise, especially in the forenoon, sometimes headache in the afternoon and occasionally a hypersensitiveness of the entire nervous system. There may be alternative vivacity and depression. As objective symptoms, one may find, if the temperature is taken at short intervals during the day, a slight rise of temperature above the normal, possibly reaching 99 and sometimes 100; a pulse above the normal and pupils dilated, perhaps one or both. On physical examination one may find slight broncho-vesicular breathing over the affected area, perhaps merely harsh breathing with a slight pleuritic rub on expiration; some increase in tactile fremitus and vocal resonance, as a rule, but not always; slight bronchophony, and usually impairment of resonance. The impaired note may be merely a deviation from the normal but it is distinctly circumscribed. Physical signs are more apt to be found over the back than over the front, but may also be found above the clavicle and over the clavicle. With a circumscribed lesion of this character, and subjective and objective symptoms corroborating the story told by the lesion, the diagnosis of tuberculosis is justifiable, however improbable it may look otherwise.

Tuberculosis of the lungs of a more advanced character than that just described may still be termed early tuberculosis, both from the viewpoint of time and of prognosis. Infiltration of a whole lobe, with some softening and even with slight cavitation, and infiltration of one lobe with scattered tubercles in another lobe, or even in two other lobes, may be considered early tuberculosis of the lungs from the diagnostic point of view. As a matter of time, tuberculosis of years duration may be called early when the disease is very chronic, because in such cases the natural duration of the disease is many years. As a matter of prognosis, tuberculosis is early so long as recovery can take place without much loss of tissue. It is in this sense that we must speak of early diagnosis of tuberculosis, because it is in this sense only that we can get cases to diagnose. Tuberculosis really does not become a disease until considerable tissue has been invaded, often not until some tissue has been destroyed, and the physician cannot expect to be consulted until it has become a disease.

The only way in which lymphatic tuberculosis and lung tuberculosis in its very beginning are likely to be found is by looking for it in well people who have been exposed to tuberculosis intimately enough to make an implantation possible. The probabilities are that all people who have been exposed in this way have tuberculosis in the lymphatic stage, or the very early lung stage. Search for these kind of cases may be made in dispensaries and occasionally in private practice, but cannot be pursued extensively in private practice in the present state of public enlightenment, inasmuch as to do so would expose the physician to criticism.

Diagnosis of lung tuberculosis, when a whole lobe is involved, is easy enough and failure to make such a diagnosis at the present day lays the physician open to just criticism. The history of the case and the subjective symptoms ought by themselves to enable the physician to make a tentative diagnosis. With a history of exposure to tuberculosis, with malaise, gastric disturbance, pain, some sense of shortness of breath, a sense of physical incapacity, cough, expectoration, chilliness or a sense of heat and loss of appetite, or at least of relish of food with any or all of these symptoms and with absence of normal physical signs over a part of the lungs, unless the symptoms and the condition can be definitely explained in another way, the diagnosis of lung tuberculosis is always justifiable. Absence of tubercle bacilli from the sputum, in such conditions, must not be allowed to weigh too heavily against such a diagnosis.

To the trained expert a physical diagnosis in these cases is easy and can be made positively. When there is mere infiltration and the tubercles are small and scattered, the vesicular breathing over the part will lean very strongly towards the bronchial type, but will be vesicular in character. There is prolongation of the respiratory murmur and usually a slight pleuritic rub showing itself by an expiratory whiff with

the last half of the expiratory movement. There is a slight increase in tactile fremitus, slight increase in vocal resonance, and there may be feeble bronchophony. On percussion there is well defined impairment of resonance but not dullness. The most distinctive feature of these physical signs is their localization. When infiltration is dense and there is secondary infection, with perhaps some pneumonic process, or the tubercles have become very large and have softened, there is bronchial breathing, increased tactile fremitus, marked increased vocal resonance, marked prolongation of the expiratory murmur and dullness on percussion. The dullness may end abruptly or shade off to marked resonance along the border lines between the diseased and healthy lung.

When the process has gone a little further and some of the nodules have softened and been ejected, much of the congestion has disappeared from the lung and the breathing may again have become largely vesicular but usually is somewhat feeble. Tactile fremitus may have become normal again, vocal resonance may have become normal and bronchophony likely has been replaced by whispering pectoriloquy. On percussion a tympanitic quality is found in the note and if the excavation is at all large, localized tympany can be elicited. When the small cavity has dried up completely and the process has taken on a condition of rest, the physical signs in these cases come so near to the normal that the condition is often overlooked. These are the cases in which the general practitioner most frequently fails to make a diagnosis. When an individual with such a condition, however, takes a cold the physical signs take on a character which approaches nearer to the physical signs existing in more acute conditions and this makes the diagnosis easier. Absence of the normal physical signs should always raise the question of tuberculosis in the mind of the examiner, and, if he cannot clear up the case himself, he should send it to someone who has been specially trained for work of this kind.

The treatment of early tuberculosis is simple and fairly accurate. There undoubtedly is a greater tendency to recovery than to destruction. Treatment is a retracing of the steps which led to development.

It is worth while, however, in discussing the treatment of tuberculosis to define at the outset what is meant by recovery. As there is no disease in the ordinary sense of the term before considerable damage has been done, so recovery does not necessarily imply sterility from the tubercle bacillus. It is questionable whether a person who has had an implantation of tuberculosis ordinarily ever gets free from tubercle bacilli. Recovery, therefore, means arrest of the process of destruction and restoration to physiological health, but nothing more. For practical purposes this recovery is as good as any one can wish for. The only drawback to it is that it only lasts so long as the mode of life which brought it about is adhered to. It may be that in recovery before destruction of tissue has taken place the host becomes absolutely free from bacilli, but of this we are not certain. We have reason to believe that

the individual who has made such a recovery earns thereby a fair immunity against subsequent attacks. Our clinical observations on human beings in this regard have been corroborated in a sense by Calmette's and von Behring's experiments on animals.

For recovery from uncomplicated and unmixed lymphatic tuberculosis and the first stage of lung tuberculosis, all that is necessary as a rule is a simple life, properly selected diet, fresh air and such medication as is necessary to restore the human organism to its physiological functions. Where these things have not been departed from and an implantation has taken place by reason of intense exposure to contagion, recovery usually is brought about by nature without intervention and without discovery of the process. People develop tuberculosis when it has been implanted through overwork, dissipation, improper feeding, too much indoor life in badly ventilated rooms and depression from some great disaster, grief or acute disease other than tuberculosis. It is even quite possible that an implantation will not take place in a perfectly healthy normal human being.

For recovery from tuberculosis, when the disease has gone beyond the lymphatics and has invaded considerable lung tissue, with possibly some destruction of tissue and with perhaps even a slight mixed infection, somewhat more heroic measures are necessary. In this stage the human organism has already suffered somewhat in its physiological capacity of fighting disease and making nutrition. There is already a deficit in the bank account. The treatment must seek to re-establish the credit of the human economy. With this object in view consumption of energy must be curtailed and the manufacture of energy must be encouraged.

The treatment of this kind of cases is really the practical problem of the physician because these are the early cases which are likely to consult him and in which he can produce good results. Most of these cases can be restored to a condition of physical health and a complete arrest of the disease.

In proportion as the disease is advanced in the stage of destruction of tissue it becomes necessary to put the patient at rest to economize expenditure of energy. As most patients come to the doctor with a mild attack of mixed infection from a cold, a pneumococcic infection or influenza, it is good practice to send every patient to bed for a week or two as the beginning of the treatment. Complete rest in bed for these cases usually has a marvelous influence for good. The heart is relieved of its excessive burden and the circulation in the lungs at once improves, with abeyance of cough and all the acute symptoms which have brought the patient to the doctor. This rest in bed also facilitates the recovery of lost energy as manifested by lost weight. The patient usually gains considerable weight during this rest. After a few weeks of absolute rest in bed the patient may advantageously be put upon comparative rest, that is, sitting up the greater part of the day and resting in bed during the middle of the day and during long hours over night.

Later still he may be put on light exercise to be gradually increased to the point of endurance of a fair day's manual work. In the latter part of treatment, work or exercise is of just as much importance as is absolute rest in the beginning, a fact which should not be lost sight of by the physician who is looking for good results in the treatment of his cases.

For the manufacture of new energy a carefully selected diet is of much importance. This diet should be varied somewhat to suit the individual, but a good general basis for it is a liberal supply of milk and eggs with a reduction in the amount of solid food. My own formula for years has been: one meal of solid food a day, and three quarts of milk and six raw eggs to make up for the other two meals. My one meal I direct to be of the most liberal character: beefsteak, roast beef, roast mutton, mutton chops, fresh vegetables, fresh fruit, and an hour to eat it in. The time for this meal should always be specified by the physician, and instruction should be given the patient to masticate his food well and to take all the pleasure possible in the eating of it. A large meal eaten with relish will give a better return than many small meals taken with disrelish. The amount of time, moreover, required for digesting a large meal is practically the same as the amount of time required for digesting a small meal. By limiting the solid food to one meal a day the burden thrown upon the stomach is lessened.

Three quarts of milk and six raw eggs a day amply make up for the two meals which have been cut out and supply a form of easily digested food which gives a large return in energy for the burden which is thrown upon the economy. The large amount of liquid in this diet probably is a benefit also in that it helps to keep the kidneys well washed out, and by leaving a very small amount of residue of undigested food lightens the burden of the intestines. I usually advise my patients to eat fruit and nuts between times, if the one meal and three quarts of milk and six raw eggs do not satisfy them, but I prohibit them from using any other form of solid food until they have regained a normal weight.

Oxygen is just as necessary as food for proper nutrition and it is, therefore, of primary importance for the manufacture of nutrition, to supply the requisite amount of oxygen. Patients should be kept in the open air night and day, and if they cannot be kept out of doors comfortably they should be kept indoors with indoors so well ventilated as to make it practically the same as out of doors. The living room and the sleeping room of the patient, if he sleeps in the house, must constantly have all the windows open, and cross ventilation is absolutely necessary for a proper air supply. Draughts can be entirely disregarded except in so far as it may be necessary to make the patient comfortable. A patient may well sit between open windows if he is properly clothed.

Fresh air is necessary for another reason besides furnishing the proper amount of oxygen for the oxidization of food. Re-breathed air

is a poison and the individual who is struggling against tuberculosis is already overburdened with toxin, and should not have any of his own, making re-introduced into him. The atmosphere has the power of cleansing itself in the open, but not when it is restrained within an enclosure. When we exhale in the open air that which we throw out goes beyond our reach and the air which we take in, even though it may have some impurities of various kinds, is at least free from the impurities and poisons given off by our own bodies. The tuberculous subject, therefore, should always breathe air which has not been breathed before and should be so placed night and day as to be able to do this.

As to medication I personally believe that much can be done to aid recovery from tuberculosis by the use of properly selected drugs. In a general way drugs should be used to restore physiological functions of the body when these have been deranged. If the functions of the stomach are incomplete they should be supplemented by artificial digestion. When the eliminatory organs are doing their work improperly, they should be corrected and aided. When the heart is overactive it should be quieted down. No drugs, however, should be given which dry up the secretions and excretions and which interfere with the natural process of recovery instituted by nature itself. Opiates and depressants of all kinds should be avoided. Symptoms should never be treated under any circumstances, but should always be looked upon as an indication of nature's effort to restore the individual to a normal condition. Cough can usually be controlled by will power as much as it needs to be controlled. If the secretions are not free enough and the cough is thereby made excessive, these should be stimulated and not repressed. A good general rule to lay down in medication is to give no drug except for a specific reason in harmony with nature's laws and not in contradiction of them. Where a drug can help elimination, help secretion or help to bring back an organ to its normal function, it may be used advantageously; but no drug should ever be used to quiet the cry of an organ for relief because that relief is not forthcoming, and to shut off the very action which the organ is crying for.

There are no specifics in tuberculosis, but there is at least one drug which is of very great value, on general principles, as an adjuvant, namely, iodine. Iodine has been used in many ways in the treatment of tuberculosis, from time immemorial, and in whatever form it has been used it has been found useful. I have personally for many years used it by inunction in the form of one of the rich compounds which break down readily. I first used iodoform and more recently eucophen as less offensive to the patient. I give inunctions with a saturated solution of eucophen in olive oil twice a day and I use a similar solution as an inunction for the lymphatic tissue of the pharynx. I am convinced that I have obtained more benefit from the use of this drug in this way than from any other medication I have used. Nutrition improves rapidly under these inunctions and the local signs of the disease disappear. How the

iodine acts I am not prepared to say, but of the results I have not the slightest doubt.

Some of the other drugs which I use quite frequently are nitroglycerine, sulphate of magnesia, strychnia, arsenic, pepsin, pancreatin, hydrochloric acid, phosphoric acid and sometimes digitalis. These drugs I use when they are indicated, to re-establish a physiological function which has been weakened.

Tuberculosis in the early stage can be treated successfully at home in any climate. In cases in which there is no broken down tissue, treatment in the home of the patient is preferable to any other. The treatment brings with it the training for after life. When a patient has recovered away from home, either in a sanatorium or in a changed climate, he often has much difficulty in settling down to the kind of home life which is necessary for maintaining the health which he has recovered.

All cases cannot be treated at home, however. For various reasons some patients cannot be brought under discipline at home. The fault may be in their own physical or mental make-up, or it may be in their environment. Such cases should be treated in a sanatorium in the climate to which the individual has been accustomed. It is better to do this than to change climate, since it eliminates the element of reaclimatization from the after life of the individual.

After sanatorium treatment has restored the individual to physical health, home treatment should be instituted to equip him for practical life. Under no circumstances should a patient be thrown upon his own resources after sanatorium life until he has been trained to live properly in his old sphere, or in any new sphere that he may take up.

THE NATURE OF CANCER AND RECENT ADDITIONS TO THE
METHODS OF TREATING INOPERABLE CANCERS.*

By FRANK J. LUTZ, M. D., of St. Louis.

I return to you my sincere thanks for this opportunity to present to the members of the Missouri State Medical Association, and through them to a wider circle, a review of our present knowledge concerning the nature of cancer and, based upon it, the limits of its treatment.

Cancer is world wide in its distribution. Concerning its biology medical knowledge is crude and immature; it occurs upon the surface of the body and in the internal organs; it exists before birth; it saps the full grown body and increases the burdens of ripe old age. Animals and man are afflicted with it. Its presence entails horrible, loathsome suffering. Internal medication fails to cure it; the charlatan only, and the quack and ignoramus instill false hopes of recovery into the heart and mind of the doomed victim in exchange for his gold.

What a field for science! What opportunities for philanthropic endeavor!

Cancer is a disease of the skin, mucous membranes, or of the glands in which tumors are formed. These tumors grow by the proliferation of their tissue elements, at the site of their origin and in other localities to which they may be carried by implantation, or by the blood or lymph currents; there is no limit to their growth; they displace and injure neighboring structures; they have a tendency to disintegrate so far as their older component elements are concerned, thus loosing parts of their substance by ulceration, and they destroy the body by producing a cachexia and by auto-infection. This definition, as is apparent, expresses the clinical observation of the disease.

Morphologically a carcinoma is a tumor in which the stroma and the parenchyma are distinctly separated. The parenchyma cells do not form an intercellular substance and do not enter into organic union with the stroma, in contradistinction to the sarcomata, in which an intercellular substance is formed by the parenchyma cells and direct continuity with the stroma is established.

At once the question arises: What causes this riotous and purposeless cell proliferation? This old question has been answered upon many theories. I shall not review any of them, but will simply mention that during the life history of a cancer the behavior of the tumor is such that many very acute and experienced observers believe themselves justified

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in assuming the parasitic origin of cancers, and have directed their energies toward the discovery of the microörganism; whilst others have asserted that they have found it. Equally careful investigators, more particularly the pathological anatomists, deny the causative relation between the microörganism and the new growth, some admitting the possibility of it, others as strenuously gainsaying even this.

I need not repeat to you that in order to prove clinically the existence of a specific microörganism it must be shown that the micro-organism is transmissible from man to man and that the disease produced by it is inoculable.

In spite of the extensive investigations which have been made, this proof has not as yet been furnished. The transference of cancer from one part of man to another part, or from a cancerous person to a healthy one, are not instances of inoculation but of transplantation, and the alleged inoculation of a husband by his wife, or of an operator by the patient, are reasonably explainable upon other grounds than the inoculability of cancer.

But let us view the cancer, or rather the cancer cell, so called, from the general viewpoint of biology.

Nature has no pathology. Since the days of Bichat and Laennec and the epoch-making work of Virchow, it is well established that pathological processes are subject to the same laws which govern physiological processes. The laws of biology furnish the explanation for the phenomena observed in cancer. Our knowledge concerning the minute changes which are observable in cancer has arrived at a high degree of accuracy—in fact it would appear that the very limit of anatomic information concerning this disease has been reached.

What then are the peculiar characteristics of a cancerous new growth; and how can we explain them by the general laws of biology?

It is well proven that want of nutrition and over-feeding, as well as irritations of all kinds, produce cell multiplication.

By way of illustration: Gunshot injuries to nerves are followed at first by increased growth of the epidermoid structures, the hairs and the nails, soon to be followed by their atrophy. Uterine cancers take on a more rapid growth during pregnancy. An erosion subjected to constant irritation may develop into a cancer.

The low vitality of cancer cells is as pronounced as their exuberant growth. Observe the luxuriating callus in certain fractures—increased cell formation continues as long as the irritation lasts, and only after the irritation ceases, and with it the increased nutrition, does absorption take place—otherwise a cellular new growth is formed. Regeneration is but an exaggerated normal process, and physiologically organs and tissues are constantly renewed, each cell being supplanted by one newly formed.

Temperature, water, osmotic conditions and light have their potent influence in cell development, both in the animal and vegetable kingdoms.

Rapid frequent cell multiplication follows increased nutrition. In cancer the supply of nourishment is constantly increased and hence follows rapid cell production. The less developed a cell, the more speedily and the more frequently does it multiply—and a cell which produces daughter cells, whilst in a stage of immature development, transmits to its offspring the tendency to propagate itself during a low stage of development and to produce cells of smaller size. Rapid development is the characteristic of small lowly organized beings—applied to cancer it is well established that as the tumor grows the cells become smaller and develop more rapidly, presenting greater malignancy.

Has our therapeutic success kept pace with our knowledge concerning the minute structure and our biologic knowledge of cancers? Unfortunately the word "cure" is still part of the vocabulary of the physician and surgeon as well as of the laity. The average medical man thinks of a cure in connection with an external cancer, and takes only that wider view of the object for which treatment is instituted in this disease when the new growth affects an internal organ. Too much is expected because too much has been promised in connection with the efforts of medical men in the presence of cancer. The layman who is told that his disease is cancer at once asks the question: Can it be cured? The physician, unfamiliar with the clinical course of cancer, or lacking the moral courage to confess his impotency, in many instances answers the query in the affirmative, only to be doomed to disappointment, together with his patient.

Now what may be expected as the result of treatment? In malaria, an infection by the plasmodium, we have a specific in quinine. By administering this drug and by removing the patient to places not infected with mosquitoes or by destroying the carriers of the infection, we cure our patient. By removing the ingesta, which caused the ptomain infection, the patient is cured. A pneumonia, running its natural course, terminates in the recovery of the patient and, in so far as the physician has guided him through the series of disturbances grouped under the head pneumonia, the physician has cured him. Not so with cancer. In speaking of the cure for cancer as the result of anything which the physician might do, we must keep in mind two things: First, that we are dealing with a local disease, and secondly, that this local condition undergoes such disintegrating changes as to affect the general system. The answer, therefore, as to whether a cancer, in a given instance, is a curable disease, will depend upon the local condition, upon the nature of the tumor, the extent to which it has involved the neighboring structures including the glands, and the general condition of the patient, which is represented by his toxic condition.

The recognition of the nature of the local disease, or, in other words, a correct diagnosis, calls for ability acquired only by careful study and by experience. The diagnosis of a cancer upon the surface, when first it begins to develop, is by no means an easy matter. And when located in

organs not directly approachable, it calls for the exercise of the highest diagnostic skill, and presents problems the most difficult of solution. To illustrate:

A fissure in the mucous membrane of the lower lip, associated with the oft-produced irritation of the stem of a pipe, may be a cancer, but it may also be luetic. An incipient carcinoma of the stomach calls for investigations prolonged, painstaking and extensive. The mammary carcinoma, represented by a hard, nodular tumor, with a retracted nipple or dimpled skin, and with axillary glands hardened and enlarged, is correctly interpreted by one of very limited experience. Malignant new growths in the central nervous system, the brain or the spinal cord, give rise to symptoms by no means readily deciphered.

I refrain from reciting the local characteristics of cancer; a knowledge of them is the common property of medical men. But an extensive experience leads me to believe that the question of treatment is one upon which most practitioners are not agreed. A rapidly growing tumor infiltrating surrounding structures, hard, painless, fixed and associated with the peculiar cachexia indicative of the absorption of toxins into the general circulation, readily suggests carcinoma to one of experience.

Unfortunately, in spite of the great frequency with which cancer occurs, medical men have not given that attention and acquired that skill in its recognition which is possessed by them in regard to many other equally common affections. The knowledge of medical men, and of the public, concerning tuberculosis has been wonderfully increased during the last few years by an agitation which threatens to overshadow every other consideration in matters medical and sanitary. A similar agitation, less noisy and more conservative, is going on in regard to cancerous diseases. In the education necessary for the recognition and appreciation of this condition the medical profession must begin by first educating itself and then the public.

It is not the part of wisdom to rail against the quacks and pretenders whose diagnostic skill may surpass that of the physician, who justly criticizes the methods and promises of the pretender, but does not possess equal diagnostic skill and is on no higher plane concerning the limitations of therapeutic endeavor in cancer than is the quack.

Since history has been written cancer has been known and described as a destructive, incurable disease, and physicians and surgeons have at all times sought means to combat it. But not until the 18th century do we learn of an earnest warfare against this terrible affliction, as it found expression in scientific observation and investigation, as well as in the care of the unfortunates.

As early as 1701 a ward was set aside exclusively for cancer patients in the Middlesex Hospital in London, and in 1801 a society for investigating the nature and cure of cancer was formed. A few years later Mrs. Adithea Mary Stafford gave 36,000 pounds for the endowment of 26 beds for cancer patients. In 1851 the Brompton Cancer Hospital

was founded. In France a ward in the Salpetriere was assigned to these afflicted ones and many prizes were established in order to encourage the study of this disease.

I refer to these historic facts merely to show that general attention was directed to the disease by medical men as well as by philanthropists long before the time when the biologic study of it was begun.

Positive knowledge of cancer was of slow growth and exact study of tumors began only with the development of pathological anatomy.

The great Berlin physiologist, Johannes Mueller, was the first to show, by microscopic examination, that tumors are composed of cell elements which correspond to those of the human organism—and Virchow elaborated in detail the composition of the varieties of new growths.

We must, therefore, first learn to recognize the disease and then we must be familiar with its clinical course, as regards the result of its continuous growth upon the economy and eventually upon the life of the patient; and also must we know what have been the results of the various methods of treatment by which the disease has been either removed by surgical operation or attacked by other means.

Extensive knowledge gained by clinical experience furnishes the best foundation for honest dealing with the patient. Ignorance only makes prognostications in conformity with the wishes of the patient. We know, and this from the universal experience of observers, that by far the largest number of cancers, whether treated by one method or by another, whether removed by the knife or destroyed by escharotics, return. We also know that the clinical course of cancers is erratic; that no definite law governs their course and termination in all instances. We know that there is a natural cure for cancer; we know that nature endeavors, and successfully, in many instances, to counteract locally the disease by destroying the tumor soon after it is formed.

In our own day the scientific and practical study of cancer has attracted not only the attention of individuals but societies have been formed in all countries for the study of its medical and sociological bearings. The study of cancer has received an unusual impetus by endowments on the part of philanthropists, of hospitals and laboratories. Much work is being done, especially in Europe, by societies devoted exclusively to its study, aided and assisted by the governments of the respective countries. The fruits of these endeavors were thought sufficiently great to induce the second meeting of the International Surgical Society, which held its session in September, 1908, at Brussels, to devote the larger portion of its session to the consideration of cancer. It was my privilege to attend this meeting as the representative of the St. Louis Skin and Cancer Hospital, and submit our modest contribution to its truly wonderful exhibit. It will be no digression from our subject to say that the contributions to the cancer exhibit of this Congress afforded an opportunity rarely enjoyed. The illustrations furnished by the pathologists, the exhibitions of patients upon whom various operative

procedures had been practiced, the means and methods adopted in the laboratories and the results of laboratory work in regard to the biologic characters of cancer, as well as the exhibition of instruments of precision and of plans of hospitals devoted to the treatment of cancer patients, have never been equalled.

So far as I know, only the state of New York is governed by a spirit so broad and so elevated as to take into consideration cancer as an important factor in the health-disturbing causes among its citizens. It makes annually a dignified appropriation for the purpose of studying this disease in the hospitals and laboratories at Buffalo, and from that center have emanated many suggestions of value about this disease.

It should be a matter of congratulation to the citizens of this State that among its charitable institutions is one devoted exclusively to the study and treatment of cancer. I refer with pardonable pride to the George D. Barnard Free Skin and Cancer Hospital of St. Louis, recently endowed by this distinguished philanthropist. Since first its doors were opened to these unfortunates on the 1st of June, 1905, until May 1st, 1909, there have been treated in it 881 cases of cancer of all varieties.

It has for its object, first, the amelioration of the condition of the unfortunates afflicted with this dreadful disease and to whom, when they have reached the incurable stage, other institutions, whether conducted as charitable or whether a return is expected for the care of the patient, furnish no welcome shelter. In the next place it is intended that from this institution shall emanate such advice to the medical profession as is the result of the experience there gained, and therefore ample provision has been made in it for treatment by all suggested reasonable methods.

In addition, one of the great objects for which it was founded would not be accomplished were the medical profession deprived of the opportunity to study and observe for themselves in its wards the cancer disease, and before long those who desire to take advantage of it will be afforded a chance to avail themselves of the material for their personal instruction.

But besides the medical man the laity must be instructed concerning the nature and the behavior of cancer, as well as the possibility of curing it when eradicated early or of ameliorating the conditions when the disease is so situated as not to be directly approachable by surgical means, or when its ravages are so great as to preclude the hope for its extirpation.

We have a practical working theory when we consider cancer an infectious and contagious disease, and its behavior practically justifies this, and therefore if knowledge concerning it is disseminated among the people, based upon this theory, the vultures who now prey upon the fears and sufferings of cancer victims will find their harvest materially reduced, although I am not so optimistic as to believe the time will ever come when human distress and human suffering will not lend a willing ear to promises of relief.

The direct attack of a malignant new growth surgically implies its thorough removal, the organ or immediate structure in which it originates or of the surrounding tissues to which it has extended, as well as the planes of extension, the fascia and fat structures together with the lymphatic glands which drain the areas involved.

When cancer occurs in organs or tissues from which it is not removable, or when its removal would necessitate procedures of themselves life-endangering, the institution of palliative procedures with a view to alleviating suffering and prolonging life will tax the technical skill and physiologic knowledge of the surgeon. The surgery of cancer, although operative possibilities seem to have reached their limit, has by no means attained results in keeping with the hopes of the operator. Entire organs have been removed, parts of a lung, sections of the brain, some of the organs of digestion have been extirpated in toto or parts of them have been removed, and the organs of generation have been excised, and yet with it all, if value is to be attached to statistical numbers, about 60 per cent. of returns confront us.

Fortunately, however, the time limit during which these returns occur has been greatly lengthened. Not so many years ago surgeons pointed with pride and much satisfaction to cases in which the patient, after an operation, had remained free from the return of the disease for three years, and considered such a patient cured. Already this period has been extended to five years and it is confidently to be hoped that as the disease becomes earlier recognized and the laity and physicians become convinced of the advantages which accrue from early removal, patients early operated upon will enjoy immunity from this disease for a still greater period.

I wish to emphasize in connection with the surgery of cancer, the view which I fear is not taken by many who consider the display of operative pyrotechnics the acme of surgical achievement. Operative surgery should be only a part of the treatment of cancer, although the major one; but we should never lose sight of the fact that in cancer there do occur disturbances of metabolism, either preceding the formation of the new growth or consequent upon it, which call for the exercise of much discrimination and for the knowledge of which we are just beginning to lay the foundation. Our increased knowledge of physiology and dietetics, including the administration of such drugs as arsenic and iron, gives promise to aid a cancer patient, next to the mechanical means employed for the removal of the new growth.

I said a few minutes ago that the clinical course of cancer is erratic—not governed by fixed laws. In some forms the growth of the tumor ceases without known cause and without intervention; on the other hand, experience teaches that in no inconsiderable number of cases, especially when the new growth is of a diffuse character, subacute in its behavior, when it occurs in young persons, the removal of the tumor by

the knife hastens its extension and return and the destruction of the individual.

Again, there occur in older patients slowly growing tumors which do not greatly disturb their comfort and which should be left severely alone, unless excessive pain, ulceration or hemorrhage demand interference. Between these extremes must be grouped that large class of malignant tumors in which early, thorough removal confers great benefits and promises complete cure.

For inoperable, neglected cases any method which gives promise of even ameliorating the condition should be welcomed.

The observation that the Roentgen ray affects the skin of those exposed, which was made soon after the discovery of the x -ray, led at once to its therapeutic use in cancer. Clinical experience has not sustained the enthusiastic claims of its advocates, but has restricted its use to superficial cases in which it causes destruction and exfoliation of the cutaneous cancer in the same manner as degeneration is brought about by other causes. And since this destructive process is slow and superficial in its action it has no advantage in many cases in which the disease can be permanently removed by a slight surgical procedure. Furthermore, it has no special affinity for the cancer cells and therefore when used so strongly as to destroy cancer tumors more deeply situated it also destroys the surrounding tissues.

It has been my practice, however, to give all cases, in which it has been practical, such benefits as may come from a post-operative course of x -ray exposure.

Nor should we forget that there is some truth in what our surgical predecessors observed at the bedside, when they taught that a cancer which had been removed by the knife and in which the removal was followed by suppuration, did not recur as soon as when immediate union of the operation wound was secured. Not that I would be understood as advocating wound infection as a method of after treatment—the futility in carcinoma of infection artificially induced by the bacillus erysipelas warns against this—but a wound surface remaining after thorough excision, allowed to heal by granulation and exposed to the Roentgen rays, gives greater promise of having destroyed in it all the cancer tissue than one in which the wound is hermetically sealed or only slightly drained.

In inoperable uterine cancers with hemorrhage, excessive discharges and foul odors, the methodical application of acetone, first suggested by Dr. George Gellhorn, one of the attending gynecologists of the St. Louis Skin and Cancer Hospital, has been found not only to destroy the bad odors, but also to diminish the discharges and to limit the hemorrhage.

Coley's serum has gained for itself a permanent place in our treatment of inoperable sarcomata more particularly, and is sufficiently well known to workers in this field.

Another method of treating inoperable cancer is that introduced by Keating Hart—the treatment by fulguration. The cancerous tissue is

removed by the sharp spoon, the knife and scissors, and upon the bleeding area a strong spark of electricity is made to play under profound chloroform anæsthesia, upon superficial and upon deep-seated cancers. The metal electrode is fed by a high frequency, high tension electric current so that the spark may reach 6 to 10 c.m. in length. This spark of lightning, which is cooled by passing it through a stream of carbonic acid, destroys the cancer cells, and also the intercellular substance, and produces upon the surface of the cancer, or in it if conducted into the tumor through penetrating needles, an eschar under which rapid granulation formation and early epidermization takes place. The involved glands are enucleated or incised and then fulgurated. One of the systemic effects during fulguration consists in the production of a kind of hypnotic sleep which permits the discontinuation of the chloroform anæsthesia.

In addition, hemorrhage ceases at once. The wound surface is covered with sterile gauze of sufficient thickness to absorb the large quantity of lymph which is poured out as soon as the local reaction takes place. This lymphorrhea continues for many days; at first the fluid is reddish in color, but soon becomes yellow and serous, and gradually diminishes in quantity. Morphologically, it contains polynuclear cells in abundance. In the presence of this abundant serous flow, no plastic closure of the wound should be attempted, but free drainage established and continued to prevent systemic infection.

The liability of explosion precludes the use of ether, as a rule.

The exact value of this method cannot, as yet, be stated. A wider experience alone will decide what place will be assigned to it.

In his relationship to others, the cancer patient must be considered as suffering from an infectious and contagious disease. If this working theory accomplishes nothing else, it will insure that surgical and social cleanliness which will make the sufferer better able to bear his affliction and which will make for the protection of his fellow-man.

There is no specific cure for cancer.

A CASE OF MELENA—RECOVERY.

By WILLIAM THOMAS DORAN, M. D., of New York City.

I am indebted to Dr. Ernest Walker, who left this case in my charge during his absence from the city.

Baby R., born 7:30 A. M., August 15th, 1908. Weighed five pounds and 15 ounces. A normal child in every way. Labor normal. The mother, when a child, had a tendency to bleed. A maternal aunt had placenta praevia.

Nothing of any importance until 8:45 P. M. of the following day, when the baby vomited a small quantity of dark blood, and seemed uneasy, and cried a good deal.

At 1 A. M. the following morning, the baby's stool was bloody. A saline enema was given, the water returning bloody; temperature 102.8. Increased vomiting; it seemed as if the mucous membrane of the mouth and nose oozed blood, of a bright red color. Vomiting continued at short intervals; clotted blood from the stomach. Stomach was washed; water returned containing clots. The following morning at 9:30, temperature down to 99.8. At noon, August 17th, consultation with Dr. C. G. Kerley, and diagnosis of melena verified; temperature, 99.8. Stomach again washed, water returning bloody. Through stomach tube administered gr. 2, lact. calc. in dr. 2 of hot water.

The child seemed to urinate a sufficient quantity. At the same time lact. calc. gr. 3, and peptonized cow's milk, were given per rectum. This was not retained and returned mixed with clotted blood. Drops ten adrenalin chloride, were given per mouth. This treatment, washing of stomach and feeding per rectum, was kept up until the afternoon of the 18th, when, with consultation, it was thought best to transfuse, child growing weaker. Transfusion unsuccessful.

On August 19th, temperature 104.4; child very weak. Stools still slightly stained with blood; vomited less blood from stomach. Baby seemed at that time inclined to keep head in backward position more or less fixed. Lact. calc. was kept up, per mouth 2 gr., per rectum 3 gr., as heretofore. Mother's milk was given to the child, peptonized, per rectum.

As far as I have been able to find this is the first case fed in this way. Temperature on the decline until 8:30 of the 19th, when it dropped to 99.8. Stools still contain small quantities of blood; very little blood vomited. Drops two of adrenalin continued by mouth.

On the 20th the child was fed mother's milk by spoon, plus nutritive enemas of mother's milk peptonized. Child seemed to retain mother's milk per rectum much better than cow's milk. Gradual decline of blood

per vomit and per rectum. Mother's milk was increased to two dr. per mouth.

On the afternoon of the 20th, child was put to breast. Seemed to get milk at times; made quite an effort at nursing. Bowel was always washed before enema. On the afternoon of the 20th, washing returned clear. Adrenalin, drops 2, with 10 drops of saline, continued every four hours. Lact. calc. per mouth and rectum continued. Child not as restless as heretofore.

On the 21st the child became restless, crying; seemed thirsty. Temperature rose to 104.8. Very little trace of blood in stools. When put to the breast would not nurse, and had to go back to feeding with spoon. On the afternoon of the 21st, temperature went down again, until in the evening it was 99.6. The child seemed unable to nurse and was fed by mother's milk per mouth and rectum.

Weight of child on the 21st, 4 pounds and 9 ounces. Still continued adrenalin as well as lact. calc. per mouth and rectum. All this time there were no signs of any infection in the navel.

On the 22d child weighed 4 pounds and 11 ounces, able to nurse a little. No bleeding after the sixth day.

On the 23d child weighed four pounds and 15 ounces.

On the 26th of August cord came off. No discharge. Child weighed five pounds, one ounce. On the following day, five pounds and two ounces. Next day five pounds and five ounces. Adrenalin and salines stopped on the 26th. Lact. calc. diminished to grains 2 given by mouth only.

After August 28th the child did not have any nutritive enemas, but took the breast. Stools became normal color.

Continued lact. calc. gr. 2, by mouth, twice daily until January, 1909.

Child now shows some symptoms of rachitis; April 12th, 1909, weights 16½ pounds.

356 Lexington Avenue.

MEDICAL AND SURGICAL PROGRESS.

AIDS TO THE DIAGNOSIS OF TUBERCULOSIS, CHIEFLY BY MEANS OF FINDING THE TUBERCLE BACILLUS.

A REVIEW OF RECENT LITERATURE.

By ALBERT E. TAUSSIG, M. D.

1. EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS BY MEANS OF THE EXAMINATION OF THE GASTRIC CONTENTS.—Hausmann (*Deut. Arch. f. klin. Med.*, Vol. 94, Nos. 5-6).
2. A NEW METHOD OF FINDING THE TUBERCLE BACILLUS.—Lange and Nitsche (*Deutsch. med. Wochenschr.*, 1909, No. 10).
3. THE USE OF ANTIFORMIN IN THE DETECTION OF TUBERCLE BACILLI.—Seemann (*Berl. klin. Wochenschr.*, 1909, No. 14).
4. A NEW CONTRAST STAIN FOR INTRACELLULAR TUBERCLE BACILLI IN THE SPUTUM.—Assmann (*Muench. med. Wochenschr.*, 1909, No. 13).
5. THE SHAPE OF THE LEUCOCYTES IN THE URINE OF URINARY TUBERCULOSIS.—Goldberg (*Deutsch. med. Wochenschr.*, 1909, No. 13).
6. THE PRESENCE OF TUBERCLE BACILLI IN THE CIRCULATING BLOOD IN TUBERCULOSIS.—Rosenberger (*Am. J'l Med. Sc.*, 1909).
7. AN ERROR SOMETIMES MADE IN EXAMINATION OF SPUTUM FOR TUBERCLE BACILLI.—Buhlig (*Quar. Bull. Northw. Univ. Med. Sch.*, quoted in *Jl. A. M. A.*, 1909, No. 24, p. 2055).

Current medical literature is full of contributions dealing with the early diagnosis of pulmonary tuberculosis. One of the most interesting is an observation recently made by Hausmann. Being a gastro-enterologic specialist he had frequent occasion to see patients complaining of gastric disturbance in whom no definite gastric lesion could be found, but in whom he thought himself able to demonstrate a beginning apical tuberculosis. Often there was apparently no cough and therefore no sputum, so that the tubercle bacilli could not be demonstrated. He habitually referred such patients to pulmonary specialists and frequently had the humiliation of having them sent back to him with a report denying the presence of tuberculosis. It finally occurred to him that in spite of the absence of cough, small particles of sputum might be cast up into the pharynx and swallowed, especially during the night. The fasting stomach contents of such patients might then contain tubercle bacilli. The first case, in which he acted upon this hypothesis, gave him a positive result. The fasting stomach contents

contained a small sputum-like lump which, when stained, was found to be full of tubercle bacilli. Within two months he was able to demonstrate tubercle bacilli in the fasting stomach contents of five other patients, in whom, on account of the absence of cough and sputum, the diagnosis had seemed doubtful. Of course this procedure does not rank with the finer diagnostic methods that enable us to diagnose a closed pulmonary tuberculosis, but in many cases it will doubtless prove to be of the greatest service, especially where there is a difference of opinion among consultants. Our own experience with this method has been satisfactory. It is usually more satisfactory to wash out the stomach with a little water rather than try to express the contents undiluted. The little cheesy or purulent fragments may then be seen floating in the wash-water and can readily be picked out.

Lange and Nitsche suggest a ready method of finding tubercle bacilli in sputa in which the bacilli are very scanty. They found that when a watery suspension of tubercle bacilli is shaken up with a hydrocarbon, the bacilli tend to attach themselves to the tiny droplets of hydrocarbon, and are carried to the surface or to the bottom according to its specific gravity. As applied to the sputum their method is as follows: 5 c.c. of sputum are shaken up with 50 c.c. of normal KOH (official liquor potassæ will serve) and allowed to stand until completely homogeneous, shaking occasionally. To the mixture, 50 c.c. of water are then added and 2 c.c. of some hydrocarbon, preferably ligroin, shaking vigorously until an emulsion results. The entire material is then gently warmed (60-65° in a water-bath) whereupon the ligroin collects on the surface of the mixture, in a clear layer. A considerable number of loop-fuls of fluid are taken from the area of contact between the ligroin and the water. These are placed on the same spot on a slide or cover-glass, allowed to evaporate and stained by the usual methods. Any hydrocarbon may be used, but the heavy ones that settle to the bottom are not readily accessible to the platinum loop, while the lightest ones, such as petroleum, ether, benzine and the like, tend to run all over the cover-glass making it difficult to obtain a thick spread. Of all the hydrocarbons tested ligroin seemed the most advantageous. Diphtheria and pseudo-diphtheria bacilli, as well as the other acid-fast bacteria, behave similarly, but none of these interfere with the diagnostic value of the method.

About a year ago, Uhlenhuth found that antiformin has the property of dissolving rapidly all kinds of organic material without, however, apparently having any effect upon tubercle bacilli. Antiformin is a mixture of Labarraque's Solution (liquor sodæ chloratæ) with sodium hydrate, the proportion not being stated. It has a powerful oxidizing action. Seemann uses it in a 15 per cent. solution. The sputum is mixed with 15-20 volumes of the solution and allowed to stand in a conical glass. Disintegration begins at once and in a few minutes cheesy particles may often be picked out that can readily be crushed and stained or even used for purposes of cultures or animal inoculation. It is usually best to wait until disintegration is complete, which requires from 10 to 45 minutes. The mixture then consists of a turbid fluid with a more or less plentiful sediment consisting of detritus and tubercle bacilli. A bit of the sediment is fished out and stained with carbolfuchsin. The method may be used for sputum, pus, urinary sediment, exudates, stool, or even entire organs, such as tuberculous glands, which, if first cut into small pieces, are readily disintegrated by the fluid.

The work of Wright has attracted attention to the possible importance of intracellular tubercle bacilli in the sputum. If it is true,

that the ability of the leucocytes in the body to devour tubercle bacilli, is a measure of the ability of the organism to cope with the infection, then the prevalence in the sputum of tubercle bacilli lying within leucocytes indicates a favorable prognosis. This hypothesis is as yet not definitely established, although hitherto such intracellular tubercle bacilli have been observed chiefly in the sputum of very chronic cases, or of patients who had been long treated by means of tuberculin injection. The ordinary methods of staining tuberculous sputum do not permit the detection of intracellular bacilli since the latter cannot be distinguished from bacilli lying above or below pus cells. Assmann has found the following stain useful for this purpose:

1. Fix and stain a very thin spread of sputum on a slide in the usual manner with hot carbol-fuchsin for one minute. Decolorize first in 5 per cent. sulphuric acid and then in absolute alcohol until the spread is macroscopically colorless.

2. Wash in running water at least half a minute and dry with filter paper.

3. Place the dry slide in a clean Petri dish, cover with 40 drops of Jenner's stain, so that the fluid does not run over the edge of the slide and stain 5 minutes.

4. Pour into the dish 20 c.c. distilled water, to which 5 drops of a 0.1 per cent. solution of potassium carbonate has been added. Agitate the dish gently until a homogeneous violet solution results. Allow this to stand for 3 minutes.

5. Remove the slide, rinse gently with distilled water and dry carefully with filter paper.

The tubercle bacilli are stained a brilliant red and, if intracellular, lie within the pale rose of the protoplasm surrounded by a narrow colorless areola. The latter enables one definitely to distinguish between true intracellular bacteria and those that merely lie in contact with the pus cells.

Some years ago Colombino made an interesting observation. He found that in non-tuberculous infections of the urinary passages, the leucocytes in the urine are round, sharply contoured and readily stained. In urinary tuberculosis, however, they are elongated, polyhedral or jagged; they have excrescences, so that their cell-membrane seems burst. In the stained preparation, the leucocytes have an irregular outline, the protoplasm contains vacuoles and the nuclei stain poorly. The changes are found not only in the polynuclear leucocytes, but also in the large mononuclear cells. He considers them due to the action, upon the cells, of the tuberculous toxin and believes their occurrence pathognomonic of urino-genital tuberculosis. In view of the impossibility of demonstrating the presence, in the urine, of tubercle bacilli without animal inoculation, this observation, if confirmed, might prove of great diagnostic importance. Goldberg has recently studied a large number of cases of pyuria from this point of view. He found these changes in the leucocytes uniformly present in all cases of urinary tuberculosis, and absent in all cases of calculus. In acute and chronic gonorrhœa, however, the same phenomenon was observed so that these degenerated pus cells can be utilized diagnostically only if gonorrhœa can be excluded.

The most important contribution in regard to the detection of tubercle bacilli is apparently that of Rosenberger. He was able to demonstrate the presence of tubercle bacilli in the circulating blood of every case of tuberculosis examined, whether acute or chronic, incipient or advanced. The matter was discussed in some detail in a previous issue of this

JOURNAL (June, p. 429). The method is simplicity itself. Five cubic centimeters of blood are mixed with an equal amount of 2 per cent. sodium citrate and 1 per cent. sodium chloride solution. After standing over night in the ice-box a little of the sediment is dried on a slide, laked with distilled water and stained in the usual manner. The bacilli, it is said, can usually be found without very great difficulty. The writer of this abstract has not been very successful with this method, having been unable to find the bacilli in a considerable number of clear cases of tuberculosis. Whether this is due to lack of patience, faulty technique or actual absence of the bacilli, remains to be determined.

Artefacts in the sputum are not usually of such a nature as to lead to serious diagnostic error. Buhlig, however, points out that in the attempt to hurry a preparation of sputum for microscopic examination, the smear is often heated before it is quite dry, producing in this way artefacts that are sometimes with difficulty differentiated from tubercle bacilli.

BLOOD PRESSURE.

A REVIEW OF RECENT LITERATURE.

By JESSE S. MYER, M. D.

1. BLOOD PRESSURE IN MAN, ITS MEASURE AND REGULATION.—Brunton (*Lancet*, October 17, 1908).
2. STUDIES OF THE RELATIONSHIP BETWEEN RESPIRATION AND BLOOD PRESSURE.—Lewis (*Journal of Physiology*, 1908, page 213).
3. CONCERNING THE FUNCTIONAL SOLIDARITY OF THE TWO SIDES OF THE HEART.—Kraus and Nicolai (*Deutsche med. Woch.*, January, 1908, No. 1).
4. CAUSE OF SUDDEN FALL IN BLOOD PRESSURE WHILE EXPLORING THE COMMON BILE DUCT.—Ransahoff (*Annals of Surgery*, 1908, Vol. 48).
5. INFLUENCE OF CO₂ BATHS UPON THE BLOOD PRESSURE.—Hürter (*Zeitschr. für phys. und diätet. Therap.*, 1908, Bd. 12).
6. THE BLOOD PRESSURE.—Elsner (*N. Y. State Journal of Medicine*, July, 1907).
7. METHODS FOR DETERMINING THE BLOOD PRESSURE AND THEIR PRACTICAL SIGNIFICANCE—F. Kraus (*Deutsche med. Woch.*, February 11, 1909).

Sir Lauder Brunton gives a very complete review of the subject of the development of blood pressure technic, and the various instruments which have been used in the work. The von Basch sphygmomanometer, Potain's sphygmomanometer, Gaertner's tonometer and the Riva Rocci, Oliver and Martius sphygmomanometers, together with the author's own instrument, which includes an aneroid for measuring the blood pressure instead of the usual mercury manometer, are all pictured and fully described. In normal individuals, the author has found the maximum blood pressure to be as follows:

Between the ages of 8 to 14, 90 mm. Hg.

From 15 to 21, 100 to 120 mm.

From 21 to 65, 120-125 to 150 mm.

In women the average is from ten to fifteen mm. lower, and in strong, athletic men from 10 to 15 mm. higher. He calls attention to the probability of an abnormally low blood pressure being premonitory of phthisis, and suggests further observations on this point. After influenza the fall in blood pressure is sometimes very marked. He has found a powder consisting of potass. nitrate, gr. 15; potass. bicarb., gr. 10; sodium nitrite, gr. $\frac{1}{2}$ -2, given in a glass of water, mornings, as very efficient in many cases of hypertension.

Several very interesting laboratory experiments with practical significance have recently appeared, among these a paper by Lewis. This author tried to determine on cats the effect of changes in the intrapericardial pressure on the aortic pressure, and comes to the following

conclusions: A rise of intra-pericardial pressure of one mm. Hg. gives a fall of blood pressure in the carotid of eight to nine mm. and this effect is almost immediate, occurring within one to three heart beats. Cohnheim and Frank obtained similar results, although they employed greater variations in the intra-pericardial pressure. The author finds that when relatively large positive pressure is used, the ratio of 1 to 8 tends to increase; when relatively large negative pressure is used, this ratio tends to decrease. The mechanical effect upon the blood pressure of breathing seems to act through pressure on the pericardium, and not through any change of resistance in the blood vessels of the lungs. It has never been demonstrated that change in the diameter of the lung vessels, resulting from alteration in the intra-pleural pressure, has any appreciable influence in the production of the inspiratory rise of blood pressure. In man, a deep intercostal inspiration, not prolonged, yields a pure fall in blood pressure, a deep diaphragmatic inspiration, a rise. It would seem from these observations of Lewis that the clinician in cases of pericarditis and also of hydrothorax from whatever cause, would do well to pay particular attention to the blood pressure and its variations. A continued low blood pressure might be of a decided aid in diagnosing pericardial effusion, though this will have to stand the test of clinical observation. Another series of observations upon animals, though not bearing directly upon the subject of blood pressure, are those recorded by Kraus and Nicolai. By means of the electro-cardiogram the authors were able, in experiments on dogs, to demonstrate that the two sides of the heart may act independently of each other. By stimulating separately the right and left ventricles, typical and distinct electro-cardiogram curves were seen for each. They conclude that in clinical cases which are analogous—*i. e.*, in ventricular extrasystole, it is possible by the electro-cardiogram to distinguish between the right and left sided origin of the phenomenon.

Ransahoff, in experiments upon rabbits, attempted to find the cause of the shock so often attendant upon operations on the common duct. The animals were etherized through a tracheal canula, and the blood pressure determined directly from a canula introduced into the carotid. Opening the peritoneal cavity resulted in a slight fall of pressure with quick return to normal; traction on the gall-bladder produced no effect on the pressure; traction on the pylorus, and thus on the gastro-hepatic omentum, in a pedad direction, produced no effect, but in the ventrad produced a slight fall, seemingly due to a slight kink in the portal vein; vigorous sponging in this region caused a slight gradual fall. The pylorus was isolated and the tip of the finger introduced without pressure on the vena cava, into the foramen of Winslow. In each case at the moment of introduction a sudden drop in the blood pressure of from 20 to 40 mm. occurred with rapid pulse, but when the finger was removed the pressure immediately rose to normal again. The portal vein was now isolated and a temporary clip applied, whereupon the blood pressure immediately dropped 50 mm. and gradually rose to normal again when the clip was removed. Control experiments on the human during operation showed a fall in pressure from 105 mm. to 70 mm. on introducing the finger into the foramen of Winslow. The author concludes that the fall in blood pressure is due to compression of the portal vein with consequent impediment to the blood flow, and suggests that digital exploration of the common duct should be intermittent in order to avoid shock.

Hürter finds that CO₂ baths between the temperature of twenty-nine and 32 C. do not lower a pathological hypertension. Above 32 C. there is a marked fall, which, however, tends to rise even above the original tension after the bath. A lasting effect in regard to tension is not to be had from these baths.

Elsner believes it is as important to take a blood pressure as to examine the urine. Of 600 patients, nine (1.5 per cent.) had chronic hypertension. It is especially important to know the blood pressure in persons between the ages of 35 and 50, in order to guard against overwork. Hypertension and arterio-sclerosis are by no means synonymous terms and arterio-sclerosis is not necessarily a high tension disease. In angina pectoris the tension is often decidedly low, both during and between attacks. In chronic hypertension, hypertrophy of the heart and chronic interstitial nephritis are to be looked for in the course of what should be a thorough physical examination. The hypertension is often the first symptom of beginning interstitial nephritis, and is present before there is albumin in the urine. Thus chronic hypertension calls for repeated urinalyses. "The earliest rise of blood pressure in a syphilitic should arouse suspicion and demands active interference." In the majority of cases of Gracve's disease there has been a normal pressure or moderate hypertension. "We have had a number of opportunities to establish the fact that during the early hours of intestinal perforation in typhoid, blood pressure promptly rises."

Kraus, in an article in which he considers various methods for the determination of the blood pressure and their practical value, says the blood pressure is dependent upon, first, the elasticity of the vessel wall, and, secondly, the volume of the blood which the vessel contains at any given time. The first factor is again dependent upon the condition and tone of the vessel wall, and the second factor depends, first, upon the capillary resistance and the consistency, etc., of the blood, and, second, upon the pulse rate, the volume of blood thrown out at each systole and the total amount of blood of the body. The usual ordinary pressure denotes a certain balance between these various factors. Kraus discards the terms systolic and diastolic pressure as they are at present used, and does not believe that the diastolic pressure, as it is measured with the pneumatic cuff and manometer, is a correct measure of the true physiological diastolic pressure. He also uses the term maximum pressure, "Maximaldruck," instead of systolic pressure. The question as to whether the pressure in the brachial artery is also the pressure of the aorta does not appeal to the author as one of urgent practical importance, since there is certainly some rather close relation between the two which is sufficient for clinical purposes. The author, in a previous communication, called attention to the fact that a determination of the blood pressure alone, without a knowledge of the amount of blood thrown out by the ventricle at each systole ("Herzschlagvolumen") can give us no idea as to the sufficiency of the general circulation. Nor is it proper to assume that a low blood pressure indicates a large ventricular systolic output and vice versa. Recently, Plesch has developed a method for determining this very important factor in an indirect way by determining the amount of CO₂ the individual takes in at a given time, the amount of CO₂ in the circulating venous blood and the amount of CO₂ in the circulating arterial blood. The technic is somewhat complicated, but it is to be hoped that by this method we shall gain an insight into many clinical phenomena as yet little understood.

APHASIA.

A REVIEW OF RECENT LITERATURE.

By SIDNEY I. SCHWAB, M. D.

1. A REVIEW OF THE QUESTION OF APHASIA.—Wilson (*Review of Neurology and Psychiatry*, March, 1909).
2. L'APHASIE DE BROCA.—Moutier. March, 1909.
3. DOCTRINE DE L'APHASIE.—Bernheim (*Revue de medecine*, 1908, Nr. 9).
4. OBSERVATION D'APHEMIE PURE (anarthrie corticale).—Ladame et C. v. Monakow (*L'Encephale*, 1908, Nr. 3).
5. EIN FALL VON TRAUMATISCHER APHASIE MIT RECHTSSEITIGER HEMIPLEGIE BEI EINEM LINKSHAENDIGEN. TREPANATION HEILUNG.—Myiake (*Archiv. f. klin. Chir.*, LXXXVIII., 1909).
6. UEBER ZWEI FÄLLE VON TRAUMATISCHER MOTORISCHER APHASIE.—Kerchner (*Deut. Zeitschr. f. Chir.*, XCIV., H. 1, u. 2).
7. THE PRESENT ASPECT OF THE APHASIC QUESTION.—Liepmann (*Neurologisches Centralbl.*, 1909, Nr. 9).

The subject of aphasia has of late attracted the attention of neurologists and physiologists on account of the new conception of the problem advanced by Marie and his pupils. In the last three or four years the number of papers that have appeared upon the question is enormous. It is proposed in this review to state the conception of aphasia that has developed from the original work of Broca and Wernicke, and then to show in what way Marie has attempted to modify these conceptions, and further to quote from some of the recent literature on the subject to illustrate how these divergent views are regarded by some of the best qualified authorities on the subject. The best recent paper on the question is by S. A. K. Wilson, entitled "A Review of the Question of Aphasia." In this paper is contained a statement of the old view, a statement of Marie's view, and a critical discussion of the arguments, for and against the change. The paper is largely devoted likewise to a criticism of the most pretentious work in support of the Marie idea, that of Moutier. This work of Moutier's is by all odds the most comprehensive study that has appeared; it contains practically all the bibliography up to 1908, with a critical examination and discussion of all the pathological data which has been collected and studied in the laboratory of Marie.

By using these two sources, it will be possible to determine clearly the nature of the problem and likewise some idea of a newer view. It should be mentioned in the first place that there is no problem in the physiology of the nervous system that is any more complex than that of aphasia, and, moreover, that there is no problem which has been befogged to such an extent as has this one. The reason for the latter is that practically everyone who has attempted to write upon the question, has advanced his own theory in respect to the physiology of speech, and not only that, but many useless and misleading terms have been invented to explain this or that small variation from what had been known before. Diagrams have been devised to illustrate each author's view, and so

complex have they become that it is almost impossible to arrive at any just opinion as to the prevailing notion existing now.

The problem of aphasia in its simplest form and from the standpoint of teaching, might be stated in this way: In the left hemisphere in the majority of individuals there are four centres of speech. These centres are in no sense sharply limited areas, in the sense of a spinal cord reflex, for example, but are centres in a physiological and functional capacity; that is, certain areas, the size of which is unknown, have to do with the specialized function of speech. There are two receptive centres and two executive centres, as Wilson calls them. One of the receptive centres is where the auditory memory-images of words are stored, situated in the upper temporal convolution chiefly, towards its posterior end; the other is for the visual memory-images of words, and it occupies the neighborhood of the angular gyrus. Of the executive speech centres, one is the centre for motor speech, the so-called "Broca Centre," at the posterior end of the third left frontal convolution, while the other is a centre for the movements of writing, situated somewhat above the Broca Centre. Now, with these four centres almost all the different forms of aphasia can be explained about as satisfactorily as any physiological activity of the cortex can be explained. The recognition of these centres has been made by deductions from a large mass of clinical and pathological evidence. It is easily seen then that aphasia can be, in the first place, roughly divided into a lack of understanding for words and a lack of ability to utter words. In other words, there is a receptive difficulty and an executive difficulty. To the executive difficulty the name "motor aphasia" has been given, and to the other "sensory aphasia." The motor aphasic is practically dumb; he can articulate only a few words or syllables, though he understands what is said to him perfectly. The sensory aphasic can utter any number of words, phrases or sentences, but he fails to understand what is spoken to him, what he reads and what himself says. Now, Broca's notion, and for that reason it is called the "classical notion of aphasia," is that motor aphasia is caused by a lesion located in or near the Broca Centre, whereas sensory aphasia is located in or near the centre for the sensory speech mechanism. It is naturally supposed that in all speech disturbances as outlined above, that the peripheral mechanism of speech, lips, tongue, larynx, vocal cords, etc., are normal. Furthermore, one point must be considered, and that is that in all speech activity, whether of one kind or another, there must be mechanically an intellectual participation. Further, we must remember that in any disturbance of speech there must likewise be a disturbance of the intellectual sphere. In 1906 Marie commenced to publish a series of communications on the subject of aphasia. His views have been supported very largely by the remarkable theses of Moutier. Marie and his pupils uphold the following four propositions: 1, the third frontal convolutional does not play any rôle in the disturbance of speech; 2, there is no essential distinction between motor and sensory aphasia; 3, pure or sub-cortical aphasia do not exist; 4, in every case of aphasia there is intellectual impairment. As opposed to Marie's view, Dejerine, in numerous publications, has supported the older view. The number of publications on the subject of aphasia since the first publication of Marie's work has grown tremendously. It is difficult to determine just where the prevailing opinion is.

Bernheim, of Nancy, states his idea somewhat as follows: There exists neither a centre for the memory of words nor for phonetic articulation, nor for the auditory and visual memory. Such portions of the cortex, as were formerly considered centres, are merely stations through which impulses go. The temporal and occipital cortex contains the

hearing and sight impressions; the frontal lobe merely interprets them. The frontal lobe creates internal speech, which is rendered audible by the bulbar nuclei.

Ladame and Monakow published an observation, clinically and anatomically studied, of a case of pure motor aphasia, or, according to Wernicke's nomenclature, cortical aphasia. The chief symptom was an absolute inability to talk, with the perseveration of understanding for words. The intelligence was at first not disturbed, but later declined. Anatomically they found lesions of all the fibre systems, association, commissural and projection systems. The Broca convolution and the operculum were both disturbed.

A number of recent surgical papers have been written in which the effect of traumatic lesions followed by motor aphasic symptoms were immediately relieved by the operation. Such as recorded by Myiake and Kerchner are to the point, although the lesions found roughly correspond to the cortical presentation as outlined in the classical theory that can not be accepted naturally as proof, for the reason that such brains can not be studied microscopically.

A paper in German corresponding somewhat to the English paper, so freely quoted in the beginning of this article, is by Liepmann, entitled "The Present Aspect of the Aphasic Question." In this paper the author objects to the term "classical theory" as presented by Broca, and suggests further that the descriptions in the text-book, as outlined by diagrams, should not be considered as seriously as they have been, owing to the necessity by devising schemes which will render clear the ideas of an author. He points out that in such descriptions the variations, anatomically or physiologically, can not be considered. In this paper is quoted an interesting observation in regard to the correctness of the original Wernicke theory; a case known as Hendschel, in which Wernicke had made a diagnosis of word deafness. Finally the case came to autopsy and the brain was cut in serial sections. It was found that in the cortex of the left temporal lobe there was a very wide-spread, old focus of disease, composed partly of a fibrous tissue and partly of a calcified substance. The word deafness was caused entirely by this temporal lobe lesion. Liepmann concludes his carefully considered paper somewhat as follows: The knowledge of aphasia must be developed further from the fundamental thoughts of Broca and Wernicke. The further development of the theory cannot be brought about except by the careful study of the pathological and physiological facts which relate to cerebral lesions. The notions of sub-cortical and trans-cortical must be changed. The facts which the study of apraxia and agnosia must be brought into relation with disturbances of speech. We are far away at present from a satisfactory view of the matter. A revision, such as Marie suggests, has especially the value of preventing investigators from feeling satisfied with what has already been obtained. It means a more careful study of the facts and the conclusions which have been deduced from them. It can be seen from these brief abstracts that the whole question of aphasia is still a matter of doubt, and it suggests further that in the future all cases which can throw any light upon the subject ought to be carefully investigated from the clinical point of view first of all, and such results recorded. After cases presenting aphasia come to autopsy, the study of the brain should be made carefully and in serial sections, studied microscopically and macroscopically, and the data thus obtained be added to the clinical disturbance noted. In this way, if the material has grown large enough, a theory for speech defects might be devised which shall be satisfactory from the clinical, as well as from the anatomical point of view.

DIAGNOSTIC AND THERAPEUTIC NOTES.

THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.—Hausmann (*Deut. Arch. f. klin. Med.*, 1908, xciv., 595).—Hausmann was struck by the number of gastric cases in his practice which presented evidence of apical lesions. Those who raised no sputum he often sent to a lung specialist, and frequently his diagnosis of incipient pulmonary tuberculosis was reversed. Feeling that he was correct, he decided to examine the fasting stomach early in the morning for small particles of bronchial secretion. His first patient gave no history of cough, but had definite signs in one apex, the chief complaints being a feeling of fulness and weight in the epigastrium. A very small particle of mucous, enclosing pus cells and lymphocytes, and a few alveolar epithelial cells, were obtained from the stomach, and when stained showed about ten tubercle bacilli in a field. In the last two months he has had six similar cases, all with the same result. He urges the usefulness of this method and suggests that some of the so-called "closed" or "healed" cases may be shown by this means to be in reality "open" cases of tuberculosis.

THE RELATION OF TETANY TO THE PARATHYROID AND TO CALCIUM METABOLISM.—W. G. MacCallum and C. Voegtlin (*Jour. Exp. Med.*, 1909, xi., 118).—W. G. MacCallum and C. Voegtlin report the experimental work on this subject, which they have been carrying on for some time, and conclude that there is an intimate relation between the various forms of tetany and the relative or absolute insufficiency of the parathyroid gland. These glands have a definite specific function. When extirpation of the parathyroids is complete, tetany appears, even in herbivora. Only a small amount of parathyroid tissue is required to prevent this. The effect of extirpation may be annulled by the re-injection of an extract of these glands, even from an animal of a widely different character. The parathyroid glands contain no considerable amount of iodine. In tetany there is apparently some disturbance of the composition of the circulating fluids, ordinarily prevented by the normal secretion of the parathyroid; this change in the composition disarranges the balance of the mineral constituents of the tissues. Calcium salts bear an important relation to the excitability of the central nervous system; their withdrawal leaves the nerve cells in a state of hyperexcitability, which can be made to disappear by supplying them with a solution of a calcium salt. Tetany may be regarded as an expression of hyperexcitability of the nerve cells from some such cause; the injection of a solution of a salt of calcium into the circulation of an animal in tetany promptly checks all symptoms and restores the animal to an apparently normal condition. Sodium and potassium, as well as some other salts that have been studied, have no such beneficial effects. This effect of calcium is of value in human therapeutics as a means of tiding over the period of acute parathyroid insufficiency until remnants of parathyroid tissue can recover their function or new parathyroid tissue be transplanted. The metabolism in parathyroidectomized animals shows, among other things,

a marked reduction in the calcium content of the tissues, especially of the blood and brain during tetany, and an increased output of calcium in the urine and feces on the development of tetany. In general, then, the role of the calcium salts in connection with tetany may be conceived of as follows: These salts have a moderating influence upon the nerve cells; the parathyroid secretion in some way controls the calcium exchanges in the body. It may possibly be that in the absence of the parathyroid secretion substances arise which can combine with calcium, abstract it from the tissues, and cause its excretion, and that the parathyroid secretion prevents the appearance of such bodies. The mechanism of the parathyroid action is not determined, but the result, the impoverishment of the tissues with respect to calcium and the consequent development of hyperexcitability of the nerve cells and tetany, is proved. Only the restoration of calcium to the tissues can prevent this.

THE ANTITRYPTIC POWER OF THE SERUM OF DIAGNOSTIC VALUE.—L. Ambard (*Semaine med.*, 1908, xxviii., 532).—Ambard notes that it has been known for some time that serum possesses the property of inhibiting the action of trypsin, thus checking the digestive power of the pancreatic juice. At one time this power was supposed to be of definite value in the diagnosis of cases of cancer, but later it has been found in other conditions. In animals this antitryptic power is increased by the injection of trypsin, and in man by the ingestion of pancreatin. This increased power and its compensatory hypersecretion forms a common link between cancer, nephritis, etc., and other conditions in which the antitryptic power of the serum is increased.

THE DIFFERENTIAL DIAGNOSIS OF ACUTE LEUKEMIAS.—Schultze (*Munch. med. Woch.*, 1909, lvi., 167).—Schultze refers to the difficulty that exists in differentiating acute lymphoid and myeloid leukemias. In the chronic cases the differential diagnosis is easy, but acute cases are quite the reverse, for here one has to differentiate the lymphoblast, the antecedent of the lymphocytes, from the myeloblast, which is the parent cell of the granular leukocytes. The two cells are practically identical in size, each possesses strongly basophilic protoplasm, and their nuclei are similar. Schridde describes a narrow, clear border about the nucleus of the lymphoblast, but for most observers this is not a practical differential point. Schultze makes use of the so-called oxydase reaction (indophenoblausynthese) for differentiating these cells and especially for differentiating the tissues of lymphoid from those of myeloid leukemia. For carrying out this reaction a 1 per cent. aqueous solution of ax-naphthol and 1 per cent. aqueous solution of dimethylparaphenylendiamin (E. Merck) are needed. The naphthol, which is only slightly soluble, is warmed and then filtered after cooling. The two solutions, when united, form a blue color under the action of light through an oxidative synthesis. In the presence of an oxidative ferment the process is greatly accelerated. Myeloid tissue, when treated with these solutions, is stained blue, owing to the presence of an oxidative ferment, while lymphoid tissue remains unstained. The method is especially applicable to tissue.

THE VALUE OF THE LEUKOCYTE AND DIFFERENTIAL COUNTS IN APPENDICITIS.—Pease (*Annals of Surgery*, 1909, xlix., 385).—Pease reports a study of 300 appendicitis cases treated in the Presbyterian Hospital of

New York, in which leukocyte and differential counts had been made previous to, and the pathological lesions demonstrated at, operation. The more severe the pathological lesion the higher the leukocyte count and the higher the percentage of polymorphonuclear cells in the differential count. A good many of the cases of general peritonitis, however, gave a low leukocyte count, and thus reduced the general average below that of the average for abscess cases. The explanation is probably to be found in the overwhelming dose of infection which reduced the body reaction. It is impossible, therefore, to decide the pathological lesion present from the leukocyte count alone. The pathological lesion can be judged more accurately from the differential count than from the leukocyte count. A polymorphonuclear count of between 85 and 90 per cent. indicates the presence of a severe process; above 90 per cent., a dangerous condition probably complicated by peritonitis; below 80 per cent., safety for the time being; between 80 and 85 per cent., a doubt. These rules held good for about four-fifths of the cases, there being many exceptions to each rule. One point, and probably the most important that this investigation has taught Pease, is that it is impossible to decide from the blood count alone what pathological lesion we shall find, or even to determine whether the case is severe or not. There are many exceptions and these we must learn to interpret by other means at our command.

THE LOEWI REACTION.—A. Bittorf (*Zentralblatt f. innere Medizin*, 1909, No. 2).—According to Loewi, instillation of a solution of adrenalin into the eyes of diabetics frequently causes dilatation of the pupils. Loewi explains this phenomenon by the absence of stimuli emanating from the pancreas. The author's investigations do not confirm Loewi's opinion.

SIGNS OF EARLY DISEASE OF THE THYROID GLAND.—G. R. Murray (*British Med. Jour.*, February 13, 1909).—The mild types of myxedema, which result from a partial fibrosis of the thyroid gland, occur not uncommonly in women between the fortieth and fiftieth years of age. When the fibrosis is complete, a fully developed case of myxedema results. Some cases of fibrosis never become complete and are never recognized, and so there results a prolonged period of illness for the unfortunate sufferers. The symptoms which result from partial thyroid fibrosis usually come on very gradually between the fortieth and fiftieth years of age, and are frequently mistaken for those symptoms occurring during the menopause. There is a gradual loss of physical and mental energy, so that every action appears to require a special effort. Memory is defective, visual hallucinations are common, and sensations of cold are complained of, although the body temperature is normal. Inspection shows that the facial appearance is somewhat altered. The cheeks are rounded and full, and a central pink flush appears, imparting a fictitious appearance of improved health and nutrition. There is also a small amount of swelling of the eyelids, which has a translucent appearance like the swelling due to a subcutaneous edema, but does not pit on pressure. The face may be pale and waxy, or it may have a pale-yellow tinge. The lips are sometimes swollen. The subcutaneous swelling on the body is generally not sufficient to attract the patient's attention, though it may be found on careful examination. In the supraclavicular regions, the swelling is sometimes distinct. The back of the hands are

rounded and the feet may show a similar condition. The thyroid may be found to be slightly diminished in size.

THYMUS ENLARGEMENT ASSOCIATED WITH NERVOUS SYMPTOMS.—O. Lerch (*Med. Rec.*, March 6, 1909).—Author proposes the term "thymoke-sis" (abnormally large thymus) for thymus enlargement. In adults, the gland may be well outlined by percussion up to extreme old age. The size of the thymus when full of blood and lymph varies from 2 to 3 cm. to 12 and 14 cm. at the base. The apex parallel to the base may adjoin cardiac dulness. The area of dulness is represented by a trapezoid, the lateral sides of which are slightly curved, and which is sometimes not larger than a half dollar. In order to percuss the gland it is best to place the patient in the erect position with the head thrown back. Light as well as deep percussion may be employed; both methods will give the contours of the gland, but the results of the two methods do not always correspond in every detail. For controlling purposes palpating percussion may be resorted to.

PERCUSSION OF ABSOLUTE CARDIAC DULNESS AND ITS VALUE IN THE DETERMINATION OF THE SIZE OF THE HEART.—Schiffer and Weber (*Deutsches Archiv. f. klin. Med.*, Vol. LXXXIV., No. 5).—Orthodiagraphic control of absolute cardiac dulness evinces that it is not always possible to depend on the latter when estimating the size of the heart in normal cases and such of cardiac disease. In addition to the absolute cardiac dulness, in the interpretation of which great care must be exercised, the determination of the relative dulness is essential when an exact cardiac examination is made.

PARALYSIS OF THE LEFT RECURRENT LARYNGEAL NERVE IN MITRAL VALVE DISEASE.—W. Osler (*Montreal Med. Jour.*, February, 1909).—In mitral valve disease with great dilatation of the left auricle and compression of the left recurrent laryngeal nerve, there may be a combination of symptoms and physical signs most suggestive of aneurysm. In these cases, autopsy shows that the nerve is compressed between the greatly dilated auricle and the aorta. Paroxysms of orthopnea, cyanosis, the cracked voice, the paralyzed vocal cord, and on inspection a pulsation in the second left interspace, may make a most deceptive combination.

MOVABLE CECUM AND CHRONIC APPENDICITIS.—Wiemann (*Deutsche med. Wochen.*, 1909, No. 4).—The cause of the pains in chronic appendicitis may be situated in the cecum. There may be accumulation of feces in the same as the consequence of spastic constipation; this fecal accumulation may give rise to pressure upon the nerves. The pains may also be due to a neuritis on a toxic basis, called forth by enterotoxins. Author concurs with a former writer that a long, too freely movable cecum may cause the pain. For this reason the pain may continue after appendectomy has been performed. In such cases it does not suffice to remove the appendix but the cecum must also be securely anchored, so that the patient is rendered pain-free.

DIAGNOSTIC AND THERAPEUTIC VALUE OF LUMBAR PUNCTURE.—E. Bramwell (*Clin. Studies*, January, 1909).—Lumbar puncture is of value

in the diagnosis of meningitis from hysteria, meningism, brain abscess, etc., and for differentiating the various forms of meningitis, especially the obscure cases of cerebro-spinal fever in which isolation and serum treatment are indicated. Repeated punctures have a beneficial effect in sero-purulent or purulent meningeal inflammation. Detection of blood in the cerebro-spinal fluid may determine a doubtful case of meningeal hemorrhage. Diagnosis of neurasthenia from general paralysis of the insane is often important as is frequently *tabes dorsalis*, or of cerebro-spinal syphilis from other uncertain affections. A pronounced cerebro-spinal lymphocytosis is the rule in these syphilitic and parasyphilitic affections of the nervous system, its detection being an indication for vigorous antisyphilitic treatment. Trypanosomes have constantly been found in the cerebro-spinal fluid of sleeping sickness, while tumor cells from malignant growths of the meninges are occasionally encountered. Tuberculous meningitis in which the tubercle bacillus had been identified in the cerebro-spinal fluid, has resulted in recovery.

CORRESPONDENCE.

PARIS LETTER.

By AUGUSTE A. HOUSQUAINS, M. D.

ACCIDENTAL INJURIES TO WORKMEN.

The law which has been in force in France since 1898, to indemnify workmen who are the victims of accidents occurring during work, has had the unforeseen consequences of contributing, in a great measure, to a revision of the work of Charcot. The rigorous advocacy of this law has resulted in a large number of researches in hysteria. We know the important works of Babinski on this question. Though post-traumatic nervous disturbances have existed at all times, their frequency has increased prodigiously in France, as well as in all countries where there exists insurance against industrial accidents. There is a tendency to include under the comprehensive term "traumatic neurosis," the disturbances which are in reality either traumatic hysteria, traumatic neurasthenia, or even traumatic hysteroneurasthenia, but which should be differentiated from "traumatic neurosis" properly called. Therefore, there is considerable danger in making the correct diagnosis, since prognosis is subordinated to diagnosis. The result of all this is that, according to Professor Brissaud, the decisions from the point of view of jurisprudence are from the start inconsequential and contradictory.

According to the present conception of hysteria, the only symptoms attributable to it, outside "an attack of nerves," are limited to certain phenomena, which can be provoked by suggestion or suppressed by persuasion. This has been called by Babinski "pithiatism." The contraction, the palsy, and the anesthesia, the nature of which is no longer disputed as being pithiatic, constitute the fundamental stigmata of traumatic hysteria. But how are we going to differentiate these symptoms from a malingered hysteria?

In neurasthenia it is necessary to distinguish between two groups of disorders: First, those which are frankly nervous, and of a well-authenticated functional order—for example, denutrition, gastro-intestinal symptoms, visceral ptosis, cardio-vascular symptoms, tachycardia, and a lowering of the arterial tension; second, those which are beyond control, that is to say, are essentially pithiatic, and can be relieved only by suggestion—amyosthenia, cephalalgia, topoalgia, vertigo and insomnia. Now the appreciable visceral disorders are absolutely exceptional in pretended traumatic neurasthenia. "True neurasthenia," says M. Bernheim, "is independent of volition; it occurs in subjects who are not conceited or self-centered, but who have force of character and moral energy." The malady is auto-toxic or toxi-infectuous. It is often constitutional, and

is linked to a dyscrasia which can be brought into action by such moral causes as emotional or traumatic shock. One might define the condition as psychoneurosis, but one cannot influence a brain to rid the organism of the toxins, developed by the microbes or created by a nutritive dyscrasia. On account of these traits we see that a false neurasthenia, of a pithiatic nature, ought to be classed with hysteria, of which it is an integral part.

Associated with each other as they really are, hysteria and traumatic neurasthenia remain pithiatic; they manifest themselves under varied aspects, thanks to the special education of the wounded and the fixed idea which possesses them. Thus is explained the contagiousness of these disorders; and we know that traumatic neurasthenia has local epidemics similar to hysteria. All the accidents which supervene in consequence, or at the time of an injury, become so many pretexts for the most diverse suggestions. "By an insensible gradation," says M. Brissaud, "neurasthenic cephalalgia can become hysterical; localized amyosthenia develop into paralysis, and numbness pass into anesthesia, under the influence of conversation or even of a monologue to which the wounded is so complacently attentive." Again, neurasthenia is one of those maladies so thoroughly exploited that nearly every imaginative person is capable of maleficent deeds. The result of this medical education of the wounded is the following: A man may have a slight inclination to take up his work again, but this is outbalanced by a strong inclination to remain sick. He firmly believes that the hystero-traumatism, with which his doctor has declared him affected, is still too grave to permit him to resume his work or even to attempt a trial. A fixed idea gives birth to the conviction that he ought to recuperate all his strength without any effort on his part. If he has had a fracture of the leg, for example, he looks forward with joy to the day when the apparatus shall be removed, and it will be possible for him to walk; nevertheless, when the time arrives, he will be unwilling to get out of bed to make an attempt to walk. He insists that he ought to be in the same condition as before the accident. The pain and the inconveniences following a fracture are to him real complications. The inevitable tingling when the limb is again used are precursory symptoms of paralysis; anxiety, phobias and sensory-motor disorders complete the syndrome of a hystero-neurasthenia. But all this is only the consequence of a fixed idea, a mental creation which, suggested or spontaneously acquired, makes for "pithiatism." The fixed idea in consequence of a sort of inhibition of the volition is pushed to the condition that may be called "unconscious simulation," despite the fact that there is considerable oddity in coupling these words together. To explain the suggestibility which causes traumatic hystero-neurasthenia, a moral shock is necessary. Is it then necessary to enact a law to indemnify a moral shock? If so, the principle of indemnifying a wounded workman would apply equally as well to the accident of which he is the spectator, as to the accident of which he is the victim. At present, according to the letter of the French law, it is certain that he cannot receive indemnity unless he has received a personal wound.

It remains to add a few words to what Oppenheim has designated as "traumatic neurosis" properly called. This appellation is of a later date than the one used by English and American physicians and surgeons when describing nervous disorders, supervening after severe traumatic commotions. Walton in 1883, Putnam in 1884, Page in 1885, signalized a neuropathic and psychic syndrome, especially frequent after railway collisions, and which merits as much the name of "railway-brain" as "rail-

way-spine," since at times it unites the signs of these two clinical types. We cannot deny the hypothesis that hysteria and neurasthenia may combine to make this new entity. Undoubtedly, moral shock complicates a wound.

In reality, even when the stigmata of hysteria exist, traumatic neurosis continues with or without hysteria and neurasthenia. In traumatic neurosis, the secondary nervous disorders follow the incipient disorders too quickly to allow of a period of meditation that might give rise to a fixed idea. After the period of loss of conscience, which happens, for example, from a fall on the head, the subject comes to himself only slowly and incompletely; he is stunned, confused, without memory and without firm intent; little by little the physical state is ameliorated, but the psychic state remains far from normal; the genuine efforts he makes to recuperate his activity weaken and irritate him, and depression is accentuated. The wounded becomes listless; amnesia, perplexity, a sort of torpor engulf him; a permanent hebetude, indicative of a heavy head and aching brain, produces the most complete passivity. If we persevere in the way of re-education and also if the wounded workman is isolated, this state of a veritable psychosis is susceptible of modification in a favorable fashion; at least, the wounded does not fall into a state of systematic mutism.

Certain somatic characteristics are excellent guides in making the diagnosis; permanent tachycardia, atonic dyspepsia, fetidness of the breath with a coating of the tongue, phosphoturia, alternating reddening and pallor of the face.

What is the cause of traumatic neurosis? M. Brissaud thinks that though a violent shake-up from which an organism may suffer, may not cause fatal alterations in the centers—hemorrhage and softening—it is nevertheless capable of causing histological modifications in the centers: a sudden wrenching, more or less lasting, of the articulations of the neurones.

These, then, are the nervous disorders to be observed after traumatism. The ten years in which the law, indemnifying accidental injuries to workmen, has been in force, have profoundly modified our knowledge of hysteria, neurasthenia, and traumatic neurosis; and it is not going beyond the truth to state that the multiplicity of facts, daily observed in connection with the exercise of this law, is casting greater and greater light on the obscurities of these diseases.

June 10.

OBITER DICTA FROM FOREIGN JOURNALS.

THE MARRIAGE OF SUBJECTS WITH CARDIAC DISEASE.

"The subject of marriage by those who are afflicted with cardiac disease," says Dr. Louis Rénon, in the *Gazette des Hôpitaux* of March 6th, "is an important one to all doctors because quite often they are consulted by parents as to whether or no their offspring should marry. In the interests of the sick and of society, it is incumbent upon us to ascertain the best means of settling this vital question, for the matter is of enough import to engage the attention of all modern sociologists. Many have expressed the idea that all marriages should be preceded by a medical examination, and M. Cazalis, in his book, 'Science and Marriage,' says 'the day is not far distant when families, having decided upon a marriage, will refer the matter to their respective doctors, just as to-day they consult their notaries in regard to money matters; and the doctors' opinion will take precedence of the notaries' opinion, since the question of health is more important than the question of money.' Furthermore, the idea is beginning to take root with the thinking part of the world that we ought to exercise as much care in the choice of human progenitors as is done in the domestic zoötechny. In my book on 'Popular Maladies,' I have already insisted on these points, and I think they ought to be recalled now, since they constitute a necessary preamble to this very interesting subject."

The question of the marriage of subjects with heart disease should be separately envisaged in the man and in the woman. The personal risks in the man are almost nil; in fact, the calm of a conjugal existence is of benefit, since its tranquility is greater than was the case when he led the life of a bachelor. Granting this, would his offspring be in no danger of inheriting the paternal cardiac defect? Beyond a doubt a father affected with cardio-sclerosis, interstitial nephritis and hereditary aortic disease can, as has been shown by Huchard, engender children affected with similar lesions. This morbid heredity takes the shape of a hereditary renal debility, a matter recently insisted upon by Castaigne.

The question of morbid heredity, as a resultant of valvular cardiac disease, has been widely discussed. Although Huchard has made light of the matter, Hirtz and his pupil Servin report a number of cases in children in which a congenital mitral stenosis could be attributed to transmission. And since this is a congenital malformation there may be other malformations and stigmata of degeneration present. There are two important factors which should influence the doctor in his decision—the age of the patient and the nature of the disease. An aortic aneurysm and a valvular insufficiency that is poorly compensated, are contraindications against marriage; the evidence against the step is so overwhelming that doctors are not often asked to express an opinion. A congenital mitral stenosis, especially in a person advanced in years, should be a warning against marriage, since a patient aside from personal risks which he might encounter, may become the founder of a hereditary dystrophy. Before allowing the marriage of a subject who has arterio-sclerosis with great hypertension, a doctor should submit him

to a regimen that would exclude the habitual factors producing hypertension, such as tobacco, coffee and animal food. Finally, a man affected with cardiac disease should not espouse a woman affected in a like manner, nor should he marry a person closely related to him, since consanguinity favors the transmission of hereditary dystrophy. With the exception of these restrictions, the marriage of male cardiacs need not be interdicted.

The important part of this intricate question is the marriage of women affected with cardiac disease. Besides the risks which menace the female cardiac during pregnancy, confinement and lactation, there is danger of the child succumbing during pregnancy or confinement; or surviving with a hereditary cardiac defect. Until recently, the attitude of the doctor was simplicity itself. All the afflicted were excluded from marriage. Peter's aphorism had become a sort of law. He had formulated it *apropos* of two cases in which pregnancy was interrupted by grave accidents. These he designated by the name of gravido-cardiac accidents. Dr. Rénon, when he was head of Professor Bar's laboratory in 1894, saw a woman affected with a mitral lesion succumb to acute edema of the lungs; the urine and the serum of the blood showing considerable toxicity. But these accidents are not always fatal during the pregnancies of cardiacs. Pouliot, in his doctor's thesis (1904), "Accidents which complicate Diseases of the Heart during Pregnancy," illustrates the general acceptance of Peter's Law. Leyden is cited, since, according to him, the mortality of pregnant women affected with heart disease is 55 per 100; McDonald, on account of the higher percentage of 60.7 per 100; and Berry Hart, because he sets the number still higher, 87.5 per 100. Therefore, following the author's argument, the marriage of female cardiacs should be discouraged.

In contradistinction to the foregoing, the fact obtains that cardiacs are known to become multiparæ without any untoward results, and when a bad result does happen, it is only after many confinements. Pouliot cites the case of a cardiac who died suddenly in her eighth pregnancy. Budin mentions a case succumbing in her fifteenth pregnancy and Porak states that the number of deaths during actual labor is inconsiderable. The following important statistics are worthy of consideration: Out of 5,000 confinements Vinay found 80 affected with heart disease; of these 80, 72 had no accident, 6 suffered with asystole, 2 with pulmonary edema; of the 8 affected with cardio-pulmonary disturbances, 3 only succumbed. Demelin observed 64 with cardiac disease in a total of 5,162 confinements. Fellner in Schauta's clinic in Vienna auscultated systematically 900 women; 22 had cardiac lesions; only 2 were troubled during their pregnancy. Champetier de Ribes, out of 5,998 confinements, encountered 68 with cardiac disease; 2 succumbed. Dr. Rénon has observed 3 afflicted with mitral stenosis, a lesion that does not seem to produce untoward results during pregnancy. In sum, one can say that the majority of pregnant women tolerate their cardiopathy, a small number only presenting grave disturbances.

What accidents occur? There are two groups: cardiac insufficiency and acute edema of the lungs. Cardiac insufficiency manifests itself ordinarily towards the end of the first half of pregnancy. Its incipient sign is dyspnea, coming on at first after some exercise, later manifesting itself when the body is in repose, and finally becoming continuous. It is accompanied by profound agony and palpitations more or less violent. The cardiac swoon develops very quickly, the asystole at first is transitory and then transforms itself into amyocardia. Often as a final occurrence there is repeated hemoptysis, especially frequent in the second

half of pregnancy. The acute edema occurs ordinarily later than the cardiac insufficiency, is present in the last months of pregnancy and during labor, and sometimes even after delivery. It manifests itself brusquely by dyspnea, agony, a hacking, recurring cough with a bloody froth, and always terminates in death in a few hours. Pouliot insists justly on a special syndrome which he calls by the name of gravidocardiac cachexia. It occurs with those multiparæ who have borne many children and who suddenly, during the three weeks following confinement, present signs of cardiac insufficiency approaching rapidly to a state of irreducible asystole of extreme gravity. But the number of cardiac women who perfectly support the fatigues of pregnancy and confinement is so large that Peter's Law needs revision (Pouliot: The Revision of Peter's Law. *Arch. gén. de méd.*, fév. 1908). Potain, Vaquez and Vinay no longer forbid the marriage of cardiacs. Huchard determines this question by the exercise of good judgment. Pouliot proscribes it only in women in whom the decided disturbances carry a certainty that they cannot stand the trials of pregnancy. He interdicts it also in young women afflicted with cardiac atresia, and in those who have a slight cardiac insufficiency, only evidenced by a passing edema, oppression upon effort and a temporary albuminuria; in those who have a decidedly narrow stenosis or an aortitis with double lesion of the orifice; and finally, when cardiopathy, though well compensated, coexists with the theoretic malformations, nephritis or pulmonary tuberculosis.

The arterial tension is also an important element in the determination of the state of the sick. A decided hypotension (8 to 9 centimeters, according to the apparatus of Vaquez or Amblard), a notable hypertension of 16 to 17 centimeters measured by the same means, are good counterindications against marriage. But these disturbances in the tension, to carry weight as an argument against marriage, must not be ephemeral, but continuous; and a doctor should not be stubborn of his opinion until the repeated examinations establish the permanence of a vascular trouble. When cardiopathy is neither hereditary nor characteristic of the family; when there are no other malformations in the family; when the prospective husband is not afflicted with heart disease, nor closely related to his future wife, marriage is permissible.

The social position of the woman is a matter of much importance. Those who are exposed to fatigues, to prolonged and violent efforts, cannot undergo with impunity the coexistence of pregnancy and a cardiac lesion. In case a cardiac is advised to marry, and pregnancy occurs, precautions should be taken. It is important to supervise the alimentation, examine frequently the urine to ascertain whether albumin is present or chlorides retained, since Bar has shown that eclampsia often occurs in these conditions. All fatiguing efforts should be shunned and from the fourth month on complete repose should be enforced. During labor the surveillance of the patient should be redoubled; if there is dyspnea, it is necessary to hurry on labor by version or the application of forceps. At the moment of delivery, it is wrong to hasten matters, and to arrest too quickly the bloody oozing which always accompanies labor. This bloody discharge is more favorable than might at first be thought. Finally lactation should be discouraged, because it might be the origin of great fatigue, depression and weariness. The therapeusis in these cases consists of cardiac tonics: digitalin, spartein, oil of camphor. Pulmonary edema should be treated by general blood-letting. In the presence of grave accidents, if pregnancy is not terminated, it is necessary to resort to abortion or a premature and rapid delivery.

BOOK REVIEWS.

DISEASES OF THE SKIN AND THE ERUPTIVE FEVERS. By Jay Frank Schamberg, M. D., Professor of Dermatology and Infectious Eruptive Diseases in the Philadelphia Polyclinic and College for Graduates in Medicine. Octavo of 534 pages, illustrated. Philadelphia and London: W. B. Saunders Company. 1908. Cloth, \$3.00 net.

Dr. Schamberg's book will favorably compare with the best books on skin diseases. It contains more thorough descriptions of the eruptive fevers from a dermatological standpoint and of the exanthemata met with in typhoid fever, typhus fever, epidemic cerebrospinal meningitis, influenza, malaria, rheumatic fever, dengue, miliary fever, angina, etc., than do the other English treatises. This feature makes the book especially valuable for dermatologists, who are often called in consultation for just these eruptions. We congratulate the author on his work and predict several editions.

ADENOMYOMA OF THE UTERUS. By Thomas Stephen Cullen, Associate Professor of Gynecology in the Johns Hopkins University, etc. Illustrated by Becker and Horn. Philadelphia and London: W. B. Saunders Company. Price, cloth, \$5.00 net.

After the publication of von Recklinghausen's work on adenomyoma in 1896, considerable controversy arose as to the origin of this peculiar variety of uterine myoma. To-day, opinion seems definitely settled against Recklinghausen's theory, and this, to a very large extent, is due to the very painstaking investigations of Cullen. This book gives an exact account of all the cases of uterine adenomyoma observed by the author. In almost every case of diffuse adenomyoma he was able to trace directly the origin of the glands in the tumor to the endometrium, thus proving that these diffuse myomata are the result of a flowing outward of the normal uterine mucosa.

The book is beautifully illustrated, is printed in a type larger than that customarily used, and is a splendid specimen of the most advanced standard of make-up of American text-books.

MEDICAL GYNECOLOGY. By Samuel Willis Bandler, M. D., Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital, etc., etc. Philadelphia and London: W. B. Saunders Company. Price, cloth, \$5.00 net.

In no field of medicine is conservative treatment of greater value; but, combined with this, there is needed a knowledge of the relation of normal and pathologic genital functions to the general physical and psychic health of woman. The organism and mode of life of woman are such that, aside from the diseases and injuries to which she is liable, physiologic processes, heredity, predisposition, mental perturbation, the emotions, marital relations, etc., have an important bearing, and, therefore, the physician who enters into a study of these factors becomes a far better judge of the meaning of symptoms.

In this volume operative procedures have been viewed as a last resort in those numerous conditions, where medical means can accomplish so much.

Who could deny the correctness and convincing truth of these statements made by the author in the preface of his interesting work?

This book will be eagerly studied by every man professing to be a gynecologist, and, it is hoped, will be considered a most forceful argument against the ridiculous claim of some American surgeons that gynecology is only a special branch of general surgery.

HEALTH AND BEAUTY. By John Shoemaker, LL.D., Clinical Professor of Diseases of the Skin in the Medico-Chirurgical College of Philadelphia, etc. Octavo of 476 pages. Philadelphia: F. A. Davis Company, Publishers. 1908.

This book is of interest to the "beauty doctor," women of leisure and laymen. While the chapters on beauty from an historical, artistic and hygienic standpoint, and the chapters on hygiene, education of the body, cultivation of the mind, training, ventilation, dress, the bath, etc., are not only interesting but have some value for the student, the chapters on diseases of the skin and the eruptive fevers are of little worth, and therefore it is to be deplored that Dr. Shoemaker used his valuable time in writing a popular "cutaneous therapeutics," since it will do no harm to the lay-reader in giving him a wrong impression of the subject. It is difficult enough for physicians to make the right diagnosis in a great many diseases of the skin; hence, to give advice to the laity as to diagnosis and treatment is a mistake in judgment.

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EDITORIAL.

THE "SICK MIND."

One of the interesting studies of the day is to follow the workings of the many warped minds, hovering outside the medical edifice, in their earnest endeavors to achieve results in the sick-room which would proclaim them masters of situations that have baffled the scientific mind of the doctor of to-day. The old theory, as expressed in the writings of the founder of "Christian Science," was decidedly opposed to the teachings of medicine as we have always understood them; and even the Emmanuel Movement in its early days, before it recognized that its vitality would be short-lived without the "moral" support of "prominent" physicians, attempted to sail in turbulent waters unassisted by medical science; but these glaring mistakes are about to be rectified, since the latest expression* emanating from the ranks of religious healers is of so propitiatory a nature that we must at once admit the attitude of the writer to be a declaration of a willingness to encourage the coöperation of the medical man in the work he sets out to do. In fact, so anxious is he to effect an alliance with the medical Cerberus who guards the door to the sick-room, that he even modestly rates his functions as of secondary importance; and that his humility has not gone unrewarded is evidenced in the preface by Dr. Lewellys F. Barker, which, though guarded, non-committal and perfunctory, is nevertheless commendatory of what follows.

Reading this work in the calm which follows a day's work, we cannot but think that its very seriousness is food for much thought, for its pivotal idea is that from now on doctors should consult with clergymen in those circumstances where the mental state of a patient needs a spiritual uplift to put to flight the vagaries incident to disease, and which have proved obdurate to the insinuating fascinations of pill, powder and potion,

*Mental Medicine. Five Conferences with Students at the Johns Hopkins Medical School, by Oliver Huckel, S. T. D. Graduate, University of Pennsylvania. With an introduction by Lewellys F. Barker, M. D., Professor of Medicine in Johns Hopkins University. New York: Thomas Y. Crowell & Co.

or to the unspiritual conversation that is necessarily the outcome of a scientific training. Here, indeed, is a large, not to say, illimitable field in which to ambulate for many a day; and that no medical man, irrespective of his belief, need feel that he might roam about unattended by strong words of good cheer to make him the better able to cope with all sorts of mental states, we hasten to add that the author is not at all doubtful of the complete concord that must obtain, when there is effected a unification of the patient's, the doctor's and the clergyman's mental status. That this might be one of the most intricate problems in psychology does not occur to him, for the surety of his position will not allow him to entertain the possibility of a disagreement in the triangle—a disturbance all right-thinking physicians are only too anxious to banish from the sick-room. Disagreements in a spiritual sense are really an upheaval greatly to be deprecated; but even though there may be the wished-for placidity of thought between patient and clergyman, the third factor—the doctor—cannot be overlooked, since his purely medical machinations may be diametrically opposed to mental states that make much of the supernal. As things are now, the doctor's position in the sick-room is supreme, but his autocracy is no more assured than is that of any other ruler; in short, a slight derogation of his power might be his undoing, just as it has been in the history of other autocrats. And surely the introduction of a clerical factor would wrest some power from him; and when this is done not only is the patient no longer in his grasp, but the loosened leashes allow the introduction of the thought that the drug prescribed is of slight value,—in fact, is a negligible quantity alongside the strengthening doses of conversation as they well unremittingly from the lips of the clergyman. Influences in the sick-room count for much and neither are the times ripe enough nor the doctor's mental calibre broad enough, at present, to entertain the *rapprochement* so greatly desired by the author of "Mental Medicine."

But aside from the serious aspect of the matter, there is another phase that should enlist our attention. Whether or not the author of this work is gifted with the saving grace of humor, we do not know; but what we do know, and for which we can asseverate after toiling through his 214 pages, is that when he conceived his favorite child he suppressed all trace of it so well that his offspring is completely devoid of it. Of course, humor in a portentous work is decidedly out of place, and though we admit this willingly, we cannot suppress a smile as to what would happen in the presence of a patient, if some of the doctors, who have crossed our path, would be requested to hold consultations with clergymen. In truth, it would be no consultation at all; for if the medical man were the sort we have in mind, the spirituality of the clergyman's talk would be

as a faint whisper against his mighty words, armed to the teeth, as he is, with all the teachings the latest evolution of medical science has granted him. And the only result achieved would be the complete discomfiture of the gentleman of the cloth, the towering rage of the Æsculapian and the hysterical seizure of the patient! The literary pages from Rabelais to Sterne, from Sterne to Thackeray, in fact, all satirical literature is at one when depicting similar scenes; and since human nature never changes, there may be some justification in our disapproval to abet occurrences, which can only have for results the exemplification of the **very human** defects of doctors and clergymen.

The matter of religion is so important to the well-being of the people, that to take it out of its accustomed province and thrust it into uncongenial surroundings, is to treat it with a disrespect it does not deserve. Were the transplantation merely an encroachment on a literature that was in need of a moral uplift, it might have a laudable purpose, since the laxities of literature at times need this sort of beneficent curbing. But medicine is a healthy science that surely knows how to meet the needs of the afflicted, and as yet shows no signs of that degeneracy which is supposed to encompass us. When the time comes that proves it derelict in its offices, the thought may present itself to some of its teachers to ballast its weakening powers by the addition of the unrelated dogmas of religion. But until this happens, the enthusiastic advocates of "mental medicine" will have to content themselves with the pale and emasculated words of commendation, as illustrated in the preface which Dr. Barker has written for this latest compromise between Christian Science and the Emmanuel Movement.

THE PROBLEM OF PROBLEMS.

In former times when the medical mind was engrossed exclusively with its medical studies and took small account of the questions which were then beginning to agitate the awakening minds of the sociologists, medical literature was quite devoid of all argumentation relating to social subjects. But the advent of the multiplicity of problems, their insistence of an early solution, and their interdependence with the science of medicine, changed the color of the medical mind and, to-day, what with psychology being the prime mover of all our acts, be they wise or unwise, and sociology shooting its tentacles into the adjacent provinces of medicine and hygiene, the doctor who wishes to be reckoned with the medical vanguard in civilization's latest strides, must perforce interest himself in what is being done by all those social philosophers who have utopian

ideals. The doctrine of preventive medicine has permeated the teaching of medicine as no other force, and though the wisdom of this innovation cannot be questioned, it is not unlike other beneficent movements in this respect—that, having exhausted its virtues as a possible factor for the betterment of hygienic conditions in the province which rightly belongs to it, its ambition is driving it into the hazy and somewhat undiscovered stretches which lie between sociology and medicine. And in no respect is it more rampant than when the play of its contending and multifarious theories is brought to bear on the sexual question,—a question that has never lain dormant but which has never suffered until now from so much maltreatment resulting from a misguided enthusiasm.

To follow all the books* on this vital question by foreign and native authors, is a task that might have dismayed even the legendary Hercules; and though we would fain abjure all but the true and medical interest in the subject, the tendency of the times is such, that ignorance might be attributed to us were we to refuse to take cognizance of its aggressive vitality. A medical interest need not necessarily resolve itself into the now historic words of Mr. Podsnap, who, when speaking of a subject with small appeal to his nature, said: "I don't want to know about it; I don't choose to discuss it; I don't admit it;" but, on the other hand, should it allow itself to be whipped into a fine frenzy on account of the moral derelictions of a large part of mankind, the ignorance of children as to the importance of a knowledge of the sexual question, and that aged problem, how best to control prostitution? This interest is not altruism in its best estate, but egotism that makes much of the necessity of applying an individual idea to the general public, in the hope that the idea may fructify into the sort of revolutionary measure, that shall be a beacon to all, no matter what heredity, nationality or deep conviction has made of their natures.

If the medical philosophers who are deluging us with their views, would hark back to what mankind was in early history, in the history of the Middle Ages, and in quite recent history, they might grasp the non-elusive idea, that what they call moral defects were combated just as un-

*La police des mœurs; par Louis Fiaux. Paris: Félix Alcan.

La lutte contre la prostitution, par R. Decante, juge au Tribunal civil de Châteaudun. Paris: V. Giard et E. Brière.

The Sexual Life of Our Time in its Relations to Modern Civilization. By Iwan Bloch, M. D., Physician for Diseases of the Skin and for Diseases of the Sexual System in Charlottenburg, Berlin, etc. Translated from the Sixth German Edition by Eden Paul, M. D. New York: Rebman Company.

The Sexual Question. A Scientific, Psychological, Hygienic and Sociological Study for the Cultured Classes. By August Forel, M. D., Ph.D., LL.D., formerly Professor of Psychiatry at, and Director of, the Insane Asylum in Zurich (Switzerland). English adaptation by C. F. Marshall, M. D., F. R. C. S., late Assistant Surgeon to the Hospital for Diseases of the Skin, London. New York: Rebman Company.

successfully then as they are to-day. If in the dawn of civilization the matter was not, as it is now, in the hands of the advocates of preventive medicine, it was handled by no less an authority in law than Solon. What his success, and that of his followers in later generations, was, is attested by the many shortcomings which are ours as an undesired heritage; hence, it must appear to all, that human nature has not been an apt pupil when coercive measures were invoked to hamper it in its natural liberties. That this, unfortunately, is always the case was best appreciated by Rousseau who, from observations made in regard to what the law could not do with recalcitrant human nature, evolved his theory of complete freedom of conscience and of thought. And that his idea is still a force in the world to-day has been admitted by most sociologists; therefore, would it be unwise for the already mentioned medical philosophers to reconsider how hopeless is their task to take what is chaotic, and attempt to weld it into a malleable substance that shall bear, distinctly and with profit, the impress of all their reformatory theories?

When we envisage the important question of what would constitute the best means to lessen, if not to abolish, the social canker, prostitution, which has gnawed its way, despite molestation, through the very calyx of our vaunted civilization, we are again directly opposite the Rousseau dictum; for already the reformers, who, on account of their blatancy, have our ear, are divided into two camps: The Abolitionist School with its Rousseauism expressed in the thought "that liberty is the first of human rights and applies as well to the woman as to the man; therefore, the woman should be free, free to live the life she elects;" and the School for Regulating Prostitution, with its watchword: "Public health is, above all other duties, the one that is incumbent on society."* But the question which some of our latter-day medical reformers have grafted on the old subject of limiting the growth of prostitution, is the resuscitation of the long defunct preachment** that there should no longer be a double standard for men and women, but one standard, and that, the sort which has obtained from time out of mind for the chaste female. Every reformer has advanced this idea at one time or another, to find out, only when it is too late, that a visionary conception of what really constitutes the manner of life as tolerance and custom have made it, is no solution of the question which is of paramount importance to the doctor—namely, the lessening of the dissemination of sexual diseases.

Instruction when it is directed in the right channel is often productive of good. But while granting this as a truism, the recipient of the lessons

**La rancon du progrès*, par M. Pierre Baudin et M. le Dr. L. Nass.

***The Problem of Social Hygiene*. By Prince A. Morrow, A. M., M. D. *The Medical Times* for June, 1909.

should not be considered the negligible quantity the enthusiasm of reformers deem him, when the swirl of their theories almost engulf him. To take a youthful product that is characteristic of all the good and bad points of our civilization, and cut him loose from his moorings, only to submerge him with terrors of what may be in store for him, should he refuse to lead a cleanly life, is nothing but a retrogression to the gloom of medievalism that can lead only to revolt. But the vivacity and jauntiness of our medical reformers know nothing of gloom, for their theories are imbued with the vitality that can be characterized only as highly decorative. In fact, so buoyant are they, and so fearless in promulgating chimeras, that no passage in literature could better describe their actions than the conversation between Antonio and Sebastian in "The Tempest," where the former says: "What impossible matter will he make easy next" and the latter replies: "I think he will carry this island home in his pocket, and give it his son for an apple."

A PSYCHOLOGIST'S VIEW OF MURDER.*

The influence of odors on the emotions has always been a subject fraught with enough interest to fix the attention of those writers, whose extreme sensuousness or hypersensitiveness has led them to undergo agreeable or painful sensations after an actual experience, or later on when remembrance thereof indelibly impressed them as to what might be expected when their emotions were thus stimulated. The real or imaginary taste of drugs also causes strange emotional upheavals in those who are easily affected by memories, especially of the disagreeable sort; and in no instance has this been better illustrated than in a letter from Flaubert, which may be found in Taine's work, "De l'intelligence" (Vol. I., p. 94), and in which he says: "When I wrote the poisoning scene of Emma Bovary, I had so strong a taste of arsenic in my mouth, I was so thoroughly poisoned myself, that for two consecutive days I could digest nothing; indeed, I found it impossible to keep a morsel of food on my stomach."

If these special senses are so retentive of impressions that make for elation or great depression, why should not the sense of sight be capable of transmitting to a brain suffering from complex emotionalism, certain excitations that fall on soil congenial to their expansion? Of all colors, red is doubtless the color that has such dire qualities, that once

*An Address on a Prominent Motive in Murder. Delivered before the Medico-Legal Society on May 25th, 1909. By T. Clay Shaw, M. D., Lond., F. R. C. P. Lond. *The Lancet*, June 19, 1909.

its glamor is mirrored in a brain of hyperactivity, it may be the cause of an invincible desire to commit a crime, or be so disturbing a factor that insanity results. Anatole France, in his short story, "The Red Egg," emphasizes the fact of this color's machinations in a brain peculiarly constituted to break under their influence. And that in the minds of the people the color of red has always been associated with a lust for blood, has been evidenced not only in individual crimes, but in all those social upheavals that have led to excessive bloodshed. The Phrygian cap of the French revolutionists is not without significance.

Now all these illustrations but indicate the activity of the senses, and the sensitiveness of brains to the abnormal workings of impressions wrought from what should be the commonplaces of life; but as preliminaries to an understanding of Dr. Shaw's paper, they are of some moment, for the lust for blood or "*hæmothymia*," as he calls it, would not be the "prominent motive in murder," were blood any other color but red. If it is true that the fascination—the impelling force that cannot be vanquished by the emotional brain—arises from the morbid desire to shed blood, it is equally undeniable that its color is a factor that should not be overlooked. The recognition of what a special color may stand for as an active agent in the perpetration of blood-thirsty deeds, is as yet an undeveloped chapter in abnormal psychology; but that it is worthy of closer and more scientific attention is one of the things to read between the masterly lines of Dr. Shaw's paper.

In turning from Dr. Shaw to August Goll in his book* describing certain characters in Shakespeare's plays, we are again in the technically involved atmosphere so beloved of the tortuous legal mind. Dr. Shaw, throughout his paper, unswervingly clings to what he conceives to be an important incentive to crime; and the result is that his lucid study cannot affect the medical mind other than to convince it that criminal cases are sometimes more satisfactorily explained by the doctor than the lawyer. August Goll adds no fresh knowledge to our newer interpretation of crime, for he calls Brutus a patriotic criminal, Richard III. a born criminal, Iago a criminal by instinct, and Lady Macbeth a domineering criminal.

The right of a lawyer to classify crime, irrespective of the motives prompting the deed, and explanatory only on medical grounds, is not unimpeachable; and if the object of inquiry is, as it surely ought to be, an understanding of the criminal types which our latest civilization produces, there is required greater knowledge than is brought home to the law through the intricacies of multifarious cases. Surely Dr. Shaw,

**Criminal Types in Shakespeare*. By August Goll, Chief Magistrate, Aarhus, Denmark. London: Methuen & Co.

in appraising the criminal tendencies of Lady Macbeth, would hardly call her a domineering criminal. Rather would he class her among the highest types of those afflicted with "hæmothymia."

LITERARY NOTES.

Words of commendation fail one when contemplating the worth and value of the two volumes, "The Collected Papers of Joseph, Baron Lister," which have recently been published to commemorate the eightieth anniversary of that distinguished figure in medical science, Lord Lister. These books are not only a credit to the publisher (New York: Oxford University Press), but reflect great honor on the committee of distinguished men who are responsible for the first complete edition of Lord Lister's writings. And that this so-called *Festschrift* is far superior to the usual drool that is put out by the Germans when they wish to honor a confrère, is shown by the modesty of the various editors, since none of them indulges in fulsome praise of their idol, but allow his own writings to speak for themselves. Surely Lord Lister's contributions to medicine need none of the adventitiousness of dubious praise that is born of enthusiasm on the part of an editor; for, unassisted, they loom large on the medical horizon to-day, even though many years have passed since they first startled the medical mind by their aggressive advocacy of the principles of antiseptis and asepsis. Modern surgery would not be what it is had these splendid contributions been overlooked or negelected at the time of publication; but, fortunately, judgment in the early seventies was just as good as it is to-day; hence, there was an acceptance of Lister's teachings with results that are now the chief props of the surgical edifice. No surgeon who is interested in the growth and virility of his specialty should fail to read and re-read "An Address on the Antiseptic System of Treatment in Surgery," and "An Address on the Catgut Ligature," for even though he may think that his knowledge of these subjects is above criticism, he will soon ascertain, if he is open to conviction, that only profit can come to him through reading the wise words of one who at the time he wrote saw beyond the ken of most men.

Dr. Cabanès, whose indefatigability as a researcher of medical history is beyond dispute, has recently published, through Albin Michel, of Paris, the sixth volume of his interesting series, "Les Indiscrétions de l'Histoire." If any justification were needed for this sort of work, the foreword of this volume would amply show that enough distinguished doctors in the past have given their services to medical history to en-

courage any modern writer in the same field. Among the names mentioned by Dr. Cabanès are Rigord, physician and historian of Philip Augustus, Bourgoing, physician to Mary Stuart; Guy Patin, Gabriel Naudé, Citois, Levasseur, Marc-Antoine Daudot, George Date, Cromwell's physician, and in more modern times, Menière, Cloquet, Littré, Dubois and Brachet,—students who, by their investigations, have shed light on the questions of pathological heredity and on the vexed question of inherited morbidity. And to these names should be added that of Cabanès, for his earnest endeavors surely entitle him to a distinguished place in the list of medical historians. It is the author's opinion that medical writers, by their illuminating studies, have done more than mere historians in clearing up obscure matters in history; an assertion that has for its support the high testimony of Saint-Simon and Michelet. And with this thought in mind, Dr. Cabanès proceeds undauntedly to tackle about the most complex character in history, namely, Louis XI. From the numerous documents studied, it would seem that this king, who has stood for many years as the archetype of despicableness and craftiness, was a neuropath who, at one and the same time, was afflicted with epilepsy, hemorrhoids and leprosy! That this array of diseases was not all, is impressed upon us by Dr. Cabanès, for he mentions that there were "other numerous intercurrent maladies." After reading carefully this chapter on the man whom Casimir Delavigne, the French dramatist, drew in so masterly a manner, we must arrive at the conviction that a degenerate, a tanatophobic and even a pantophobic neuropath, may, at the same time, be a political genius of a remarkable calibre. Other chapters are devoted to Luther, Molière, Voltaire, Rousseau and Napoleon; and when we say that these characters are treated with all the rigor of a most exacting critic, we are but stating the truth. Hero worshippers should beware of this volume, but the truth-loving medical mind will find in it many explanations, based on neuropathy, for all those vagaries which have had a certain appeal for the romantic student of history. In fact, after Dr. Cabanès grills a historical character, one can say: "The mask falls, the hero vanishes and only the man remains."

THE QUESTION whether or not Napoleon's reverses at the battle of Waterloo were due to a disease that incapacitated him for the tremendous task he had set before himself, receives a fresh impetus in the article Dr. Ravarit has written in a recent issue of *La Chronique médicale*. The author says, "there is no good reason for attributing the disastrous result of the day to a disease affecting Napoleon, but what should be held responsible for the unfavorable outcome, was the series of unforeseen circumstances and strange fatalities." We gather from Dr. Ravarit's contention that not only was the Emperor not ill, but at

no other time in his eventful history was he in greater control of his physical or mental forces, and never was his genius in better shape or his unquenchable talent for strategy more effective. "Incomprehensible day, a most singular defeat, since the honor of the vanquished did not suffer and the glory of the conquerors was not augmented" were Napoleon's own words in the calm of his prison life on St. Helena when he recalled the fatal day. That Dr. Ravarit abides by good common sense when he dismisses an acute attack of the hemorrhoids as the disturbing factor of the day, is borne out by the fact that had such been the case, Napoleon would not have been able to remain on horseback fifteen hours on June 16th, the day the Prussians were annihilated at Ligny, as well as on the 17th and throughout the 18th. Hemorrhoids would have compelled him to rest, at least for some time, but all historians are agreed that on the night preceding the 18th, he passed the time playing cards and mounted his horse three times to reconnoitre the enemy. Nor does Dr. Ravarit agree with Dr. Bougon in his statement that "Napoleon's soldiers were right when they thought he must be suffering, on account of having fallen asleep opposite the Caillou farm when he should have been of some assistance to Marshal Ney in his attack on Haie-Sainte." In all his campaigns, the soldiers had remarked on the Emperor's habit of falling asleep whilst in the saddle,—an ephemeral sleep, to be sure, but so tranquilizing that even on the morning of the 18th they mistook it for calmness and extraordinary coolness. In fact, from the time Napoleon had disembarked and triumphantly marched across France to his former abode is the Tuileries, he had not had a peaceful moment, and the little sleep he desired was greatly curtailed. But even in his quieter days, this constitutional peculiarity was evident, since it was nothing unusual for him to sleep during a conversation or at the theatre; and at Tilsit, when one would think the exalted presence of an audience of kings would alter matters, he did not refrain from the habit. But Dr. Ravarit asserts that these momentary snatches of sleep were not detrimental to his activity; in fact, they were not followed by the usual torpor but by an increase in mental action, of which no better illustration is at hand than the extraordinary manifestation at the battle of Waterloo.

ORIGINAL ARTICLES.

HEBOSTEOTOMY VS. CÆSAREAN SECTION, WHEN THE LATTER IS ONLY RELATIVELY- INDICATED IN CASES OF NARROW PELVIS.*

By E. GUSTAV ZINKE, M. D., of Cincinnati.

We all are proud of the rapid, marked and beneficent progress made within recent years in the science of medicine and surgery. It is discouraging, however, when advantages which would accrue to mankind from the progress made, cannot be realized or are long delayed because of existing conditions and practices, or because of inherited or acquired prejudices. Wholesome opposition based upon sane reason or valid objections, must ever be welcomed. But protracted resistance, even when based upon prejudice alone, to accepting the new and good, while it is to be regretted, must be dealt with patiently, for, ultimately, that which is of value will find recognition and its proper place.

Of all the battles the human race has been obliged to wage none is older in point of time, greater in frequency, or more continuing, than the conflict between the mother and the child to be born. No tongue ever told, no pen ever described, no book ever recorded the agonies endured by the mothers of the past during protracted, difficult and fatal cases of labor. When in the act of birth both mother and child escaped alive and whole, it was a cause for rejoicing; if both were hurt but lived, it was still a cause for congratulation; if one died in the conflict we were thankful for saving the other; if both lost their lives, comfort was sought in this: *The best had been done.*

The picture is not overdrawn. Nor is it true only of the remote past. It is equally true of more recent times. Too often it is true of our own day. We need not look long or far for an explanation. Medical history tells the reason why succor came not sooner to the mothers, and why, when efficient assistance was possible, it was refused, not by women in labor and their immediate friends, but by those who had been trained and educated to render assistance to the lying-in, and who were called to their relief in the hour of trial and distress.

One hundred and sixty years ago absolutely nothing was known regarding the mechanism of labor. After that, through the recorded and combined observations of Fielding-Ould and Smellie, of England;

*Read before the St. Louis Surgical Society, April 14th, 1909.

Note.—By request of the author, this paper will also appear in the *Lancet Clinic*.

Solayréé de Renhac, of Montpellier; Saxtorph, of Copenhagen, and a few others, the elder Naegele, of Heidelberg, was enabled to publish to the world the *euclid of obstetrics*—the mechanism of labor.

The *doctrine of narrow pelvis*—though announced and promulgated by Deventer in the beginning of the eighteenth century—was not completed until the second half of the nineteenth century by Michaelis and Litzmann, of Kiel.

Palfyn produced his forceps (really a double vectis) in 1717. The *Chamberlen forceps*—though invented about the end of the sixteenth or the beginning of the seventeenth century—were kept a secret and not given to the profession until published by Peter Rathlaw, of Amsterdam, 1747.

Cæsarean section was not performed on the living prior to the year 1500. *Symphiseotomy* was not known before the year 1775. Both operations, though successfully performed on the human female, fell into disrepute because of the frightful mortality and morbidity attending either operation. They were, consequently, very rarely performed prior to 1880.

The *Chamberlen forceps* answered the purpose in all cases of vertex presentation when the pelvis was sufficiently ample and the head within the cavity.

The *bête noir* of every obstetrician, the much dreaded *child-bed-fever*, was well known long before the invention of the forceps, but its cause remained a secret until 1872. Though Semmelweis, of Vienna (1846-7), showed conclusively that it was a poison carried upon the student's fingers from the dissecting-room to his patients, it was not until 1870-2, when the research-work of Pasteur and Koch brought to light the true character of this preventable but grave obstetric complication. The obstetricians of the past knew, however, that child-bed-fever usually developed during protracted labor or followed it.

It is this latter fact that led, in the beginning of the eighteenth century, to the doctrine of narrow pelvis, and, later on, to the invention of the so-called compromise operations—the high-forceps, prophylactic version, and the induction of premature labor. Germany was, and has always remained, partial to prophylactic version; France introduced the long forceps and added the pelvic curve; England presented the induction of premature labor.

These three procedures became, very justly, popular operations in labor cases complicated with narrow pelvis. France preferring the high forceps, England the induction of premature labor, and Germany, prophylactic version. Thus, for a period of fully 150 years or until the time when the value of antiseptic midwifery had been recognized—the obstetrician lost no time in delivering the child by resorting to one or the other compromise operations as soon as the diagnosis of narrow pelvis had been made. He knew that if labor was not terminated promptly, child-bed-fever was inevitable. And for the same reason, if the

child could not be delivered promptly by one or the other of these operations, embryotomy was performed whether the child was living or dead.

The mortality of this practice was, naturally, very high; 10 per cent. for the mother; 60 to 70 per cent. for the child. Still, this was the best that could be done in pre-antiseptic times. It was good practice then. It is good practice to-day when it is impossible to render the patient and her surroundings aseptic. The time had long since passed in which the accoucher would sit idly by the bedside until the child had died, and then, and then only, resort to perforation.

With the advent of antiseptics in the practice of midwifery, discovery of the causes of puerperal fever, and the doctrine of narrow pelvis complete—the practice of obstetrics was revolutionized and vastly improved. The fear of puerperal fever gradually subsided, and confidence in nature's own efforts slowly returned. The obstetrician was again disposed to give the pregnant woman, who was the victim of a moderately contracted pelvis, the "*test of labor*." Only when nature's effort failed would he resort to the high-forceps, version, or, in some instances, if the contraction was very pronounced, perform a symphyseotomy or Cæsarean section.

While in Vienna, in 1891, the speaker witnessed a "test of labor" in Chrobak's clinic prolonged to a degree which, at the time, seemed to him needlessly dangerous. The patient was a III. para. The first child had been delivered with the aid of craniotomy; the second child was born dead after version. When brought before the class, the first time in this labor the patient was still in the first stage of 18 hour duration; cervix obliterated, os size of dime, membranes intact, presentation—vertex, first position, head floating freely above the pelvic brim. Pains moderate. Patient's condition good. The following day (now 42 hours in labor) she was again presented to the class. The membranes were still intact and dilatation of the os nearly complete. Pains very severe. Begs for relief. The contraction ring could be plainly seen across the amputheater. Chrobak remarked: "Gentlemen, the patient's temperature and pulse are still normal, the pelvic soft parts are free from tenderness and moist. We will wait." The next day the patient is brought before the class with a living, healthy baby in her arms. The child was born spontaneously at ten o'clock the previous evening, fifty-five hours after labor began. I marveled at the management of this case. Later I tried it in similar cases in private, as well as in clinic practice, and occasionally succeeded in delivering a living child without serious damage to the mother or the child.

Through the special work of Morisani, Pinard and Zweifel towards the end of the nineteenth century, Sigault's operation (division of the symphysis pubis) was revived and performed in cases of contracted pelvis in which the conjugata vera was not less than 6.5 or 7 c.m. The foetal mortality was at once greatly reduced. The maternal mortality,

too, was better than in the past, but because of the difficult and laborious after treatment, the frequent occurrence of imperfect union of the joint, the occurrence of hemorrhage and sepsis within the wound, and subsequent difficult and painful locomotion, symphyseotomy became again unpopular.

Cæsarean section, with which remarkably good results had already been obtained in cases of highly contracted and deformed pelves, was destined to take the place of symphyseotomy at an early date, not only in many cases of moderately contracted pelves, but for other conditions such as *eclampsia*, *placenta previa*, *ablatio placenta*, *hysteropexy*, *threatened rupture of uterus*, *advanced disease of the heart, lung and kidney* and even in cases of slight disproportion between the parturient passage and the child's head when, for any reason, there was lack of *expulsive power*.

Yet, in spite of the magnificent results obtained, chiefly by skilled operators in hospitals, there are grave objections to Cæsarean section which must be considered when the operation is contemplated for relative indications alone. Abdominal hysterotomy means an extensive incision into the abdominal and uterine wall, invasion and exposure of the peritoneal and uterine cavities. The possibility of septic infection can never be entirely excluded, ileus may follow the operation, and ventral hernia as well as complications from the uterine scar in subsequent pregnancies are features worthy of most careful consideration. Because of this, renewed efforts were made, mainly by the Italian, French and German obstetricians, to overcome the difficulties and objections attending symphyseotomy.

Gigli (1903) made the first and most important forward step in modifying symphyseotomy. The burdensome after-treatment, incomplete union of the joint, and painful, difficult locomotion following this operation, were the principal features to be conquered. Gigli, believing that bony union takes place more promptly than the healing of a divided cartilaginous joint (an idea already advanced by Galbiatti and others) invented pubiotomy, division of one of the pubic bones midway between the symphysis and the inner border of the obturator foramen. He did this by cutting through the structures overlying this region, then separated with the finger the tissues lying behind the pubic bones. The results following pubiotomy were at once better than that of symphyseotomy. The after care was less troublesome and the union of the divided bone seemed quicker and better. The danger from hemorrhage and sepsis, however, remained the same. Occasionally ligamentous union between the fragments was observed.

Doederlein improved the open method of Gigli's pubiotomy by making two small incisions through the skin, one immediately above the upper and the other directly below the lower border of the pubic ramus and parallel with the margin of the bone. Through one of the cuts he introduced the index finger and with it stripped off the tissue behind the

bone. This may be accomplished from below upwards or from above downwards. Through the canal thus created, the Gigli saw is readily passed and the bone divided as in an ordinary osteotomy. After all hemorrhage has been arrested, the incisions are closed with sutures and hermetically sealed.

Bumm, in turn, modified Doederlein's method as follows: He devised a needle for passing the wire-saw. The patient, shaved and disinfected, is placed in the lithotomy position. Thumb and index finger determine the lower border of the pelvic bone to be divided. Clitoris and labium minus are drawn towards the median line and the needle is then passed along the posterior surface of the latter bone by gently depressing its handle, and, when the upper margin of the horizontal ramus has been reached, the handle of the needle is forcibly depressed and the point of it pushed through the skin. The index finger in the vagina controls the passage of the needle to prevent injury to the urethra and the bladder. When the eyelet of the needle has been brought into view, and the little button at the end of the wire-saw has been hooked into it, the needle is withdrawn and the wire follows. A handle is now attached to each end of the wire, which is then put upon the stretch and the bone sawed through in from "five to ten" movements. During the sawing the wire must not be sharply bent, but maintained at an obtuse angle as though one intended to lift up the bone with the saw.

As soon as the bone has been divided, all resistance ceases and the ends of the bone separate with a dull sound. The needle-punctures are now compressed and a tampon, to produce counter pressure, is placed in the vagina. This is sufficient to arrest promptly all hemorrhage. If this compression is neglected hematomata and other complications are apt to occur. (Of late the use of a dull needle to pass through the tissues below, behind and above the pubic bone, puncturing the skin at the point of entrance and exit, has been suggested.)

After labor has been completed, special after-treatment is unnecessary. The application of a laparotomy bandage, which will fix the gauze compresses over the puncture wounds, and a sand-bag to support the pelvic ring on either side, is sufficient. The legs are adducted and the knees firmly tied. A retention-catheter is placed into the bladder and kept there for several days in order to avoid the movements necessary to evacuate the bladder.

Bumm adds that the results of subcutaneous pubiotomy are much more favorable than those of symphyseotomy. He has seen fifty-three successive cases recover without serious complications. Only three of the children were lost in consequence of particularly difficult conditions. Doederlein reports 294 hebosteotomies. In seventy-seven of them the open method (Gigli's) was followed and eight mothers died, 10.4 per cent., in the other 217 cases he pursued his own method and only nine mothers died, 4.1 per cent. Buerger (Vienna) performed hebosteotomy twenty-one times with uniformly good results for the mother and the

loss of two children. Reifferscheid made twenty-seven hebosteotomies with excellent results; one mother died on the fifth day of embolism. Those who have performed hebosteotomy most frequently claim that the danger of hemorrhage and infection is very small, that union of the bone, as a rule, takes place promptly, and, when this does not occur, ligamentous union follows, which is a positive advantage because it renders spontaneous labor possible in subsequent pregnancies and does not interfere with locomotion. The after-care of the patient is not as difficult as is generally believed.

The results obtained with the new therapy of narrow pelvis, of which hebosteotomy and Cæsarean section now form a part, are truly startling in character. Pinard, Zweifel, Kroenig, Bumm and Doederlein reported collectively (two years ago) more than 2,000 cases of narrow pelvis, with a maternal mortality of 0.1 per cent., and a foetal mortality of only 6 per cent. Hundreds of successful cases have been reported since, especially abroad. Williams, of Baltimore, in his last report, had thirteen hebosteotomies with very satisfactory results. Montgomery, of Quincy, Ill., performed the first and only Gigli operation in 1903 with excellent results for both mother and child. Frey, of Washington, and De Lee, of Chicago, are favorably disposed towards hebosteotomy and will give the operation a thorough trial. At present the great majority of the obstetricians in this country and in Canada and England are earnestly opposed to hebosteotomy, and are not inclined to resort to it, stating that the operation does not do away with the objections pertaining to symphyseotomy. The opposition in Great Britain and North America rests solely upon theoretical grounds. In Germany, hebosteotomy was not regarded favorably at first, but now has a firm foot-hold. On the continent of Europe, everybody, who has a clinic or hospital, performs hebosteotomy. The operation is also being successfully performed in private practice at the homes of patients, notwithstanding that Doederlein, Zweifel, Pinard, Bumm, Kroenig and others, advise against this practice.

The loudest opposition on the continent of Europe against hebosteotomy comes from Otto v. Herff, of Basel.* v. Herff does not contend so much against the abandonment of the high forceps and prophylactic version in cases of moderately contracted pelvis, but insists that hebosteotomy can never take the place of artificial premature labor. He is an ardent advocate of the latter operation. Basing his conclusions upon 700 cases of hebosteotomy collected from literature, he records the "sins" of this newest of obstetric operations as follows: 0.3 per cent. of mothers died of hemorrhage; 15 per cent. were badly lacerated and of these 12 per cent. died; in another 12 per cent. the bladder was injured; 4 per cent. had permanent incontinence of urine; in 7.5 per cent. hernia developed in the split of the bone; in all 5 per cent. of mothers

*Schmidt's *Jahr-buecher*, BD. 301, 1909, Heft. 3, p. 266, and *Munch. Medizinische Wochenschrift*, December 15, 1908.

and 10 per cent. of the children died. Only Bumm, v. Herff says, has had up to this time 53 cases of hebosteotomy with a maternal mortality of 1.9 per cent. and a foetal mortality of 13 per cent. v. Herff's maternal mortality of artificial premature labor, in his clinic, is not quite 1 per cent.; in his private practice it is approximately equally favorable. v. Herff is very liberal in his indications for the induction of artificial labor; his object is to make what promises to be difficult labor easy. He says: "This is not only humane but more merciful than to subject women to the protracted tortures of a labor complicated with narrow pelvis and which, finally, may have to be terminated in a hospital with the help of dangerous major operative interferences." He further asks: "Can a little decrease in the foetal mortality atone for a single case of permanent incontinence of urine?" He states that he is able to send home 80 per cent. of living, prematurely born children and adds: "they continue to live as well as those born at term." v. Herff's criticism sounds and looks worse than it really is. Examined closely and compared with the statistics of the mortality and morbidity of the induction of premature labor, other than his own, the shafts he has discharged against the hebosteotomist lose their force and remain ineffective. But v. Herff will be taken care of by his colleagues at home.

The speaker was much pleased when he noticed in the last issue of the *American Journal of Obstetrics* (April, 1909), the report of two hebosteotomies to the Society of the Alumni of the Sloane Maternity Hospital, New York. One by Dr. James D. Vorhees and the other by Dr. R. W. Lobenstine. The result in Dr. Vorhees' case was not good in every particular but, as he says, considering the many unfavorable conditions under which the operation was performed, it was only natural to find complications. This patient, 1 para, aet. 44, had been in labor almost five days. The child was in an R.O.P. position with the head well above the pelvic brim. Ext. pelvic measurements: betw. spines, 29 c.m.; betw. crests, 30.50 c.m.; oblique, 23 c.m.; ext. conjugate, 21 c.m. The patient was stocky, with thick pelvic bones; pelvic canal masculine in type and bounded below by a narrow pubic arch.

The Champetier de Ribes balloon had been employed unsuccessfully to dispatch dilatation of the cervix. While the patient was being prepared for Cæsarean section she had an eclamptic seizure. This, in connection with her generally weakened condition, prompted Dr. Vorhees to perform hebosteotomy, Doederlein's method. Both mother and child recovered, although this case presented one of the most troublesome complications to any operation, a vesico-vaginal fistula. Dr. Vorhees says: "This must not condemn pubiotomy." The comfort of the patient and her safe, quick convalescence make quite a different picture from that of the symphysiotomies which it had been his misfortune to have charge of at the Sloane Maternity Hospital.

Dr. Lobenstine's case had been in the care of a midwife and two physicians, who had unsuccessfully attempted to apply the forceps.

Patient, a dwarf, aet. 17; 1 para, at full term. 'Membranes had ruptured three days before admission to hospital. Labor pains (weak) for 48 hours, severe pains the last 12 hours. Ext. pelvic measurements: Betw. spines, 22 c.m.; betw. crests, 26 c.m.; ext. conjugate, 16 c.m.; right oblique, 19 c.m.; left oblique, 18.50 c.m. Depth of symphysis, 5 c.m.; true conjugate, 7.75 c.m.; entire pelvic generally contracted. Vertex presentation. R. O. position. Dr. Lobenstine has a method of his own to perform hebosteotomy. Axis-traction forceps were applied and child slowly delivered. After delivery of the child and placenta there were found to be absolutely no lacerations with the exception of a slight abrasion at the posterior commissure which existed at the time of admission of the patient to the hospital. " * * * Convalescence proceeded quite satisfactorily from the start. Owing to a moderate infection at the time of admission, the patient ran a temperature for eight days—the highest 101.4 F. Pulse 100-120." After that, progress was absolutely normal. Ten days after dismissal from hospital, patient returned for inspection in excellent condition, and reported that she went up and down stairs several times a day without any difficulty. Her gait was normal.

Taking into consideration all the facts and figures presented above, there is only one thing left for us to do: Give hebosteotomy the first consideration in all cases of narrow pelvis for which, up to this time, Cæsarean section was only relatively indicated. No one should attempt the operation except he be experienced and skilled in operative obstetrics and gynecological work; nor should the operation be performed except under the strictest antiseptic precaution, preferably at a hospital, and the patient free from sepsis and not exhausted from loss of blood or previous efforts at delivery.

THE HOPEFUL OUTLOOK OF THE TUBERCULOSIS PROBLEM IN THE UNITED STATES.

By S. ADOLPHUS KNOPF, M. D.

Professor of Phthisio-therapy at the New York Post-Graduate Medical School and Hospital; Associate Director of the Clinic for Pulmonary Diseases of the Health Department; Visiting Physician to the Riverside Sanatorium for the Consumptive Poor of the City of New York, etc., etc.

At no time in the history of the combat against tuberculosis has the outlook been so bright, have there been so many cheerful workers for the cause, have there been so many large and generous contributions by private individuals, nor have governments ever shown a greater willingness to be helpful in the crusade against the great "White Plague" than at this present time.

The first Society for the Prevention of Tuberculosis was the Pennsylvania Society founded by Dr. Flick in 1892. Ten years later the author of this article asked eleven of the leading physicians of New York to join him in the formation of a tuberculosis association. These were Drs. Hermann M. Biggs, A. Jacobi, T. Mitchell Prudden, Joseph D. Bryant, Walter B. James, Alexander Lambert, Andrew H. Smith, John H. Huddleston, Edward G. Janeway, Henry P. Loomis and Stephen Smith. They willingly responded to the call, but it was soon apparent to us all that such an organization needed to be composed of lay as well as medical men in order to really accomplish its objects, which were as follows:

I.—The promulgation of the doctrine that tuberculosis is a communicable, preventable, and curable disease.

II.—The dissemination of knowledge concerning the means and methods to prevent tuberculosis.

III.—The promotion of all movements which provide special hospital, sanatorium and dispensary facilities for poor consumptive adults, scrofulous and tuberculous children.

IV.—The promotion of all movements which tend to prevent the development of tuberculous and scrofulous diseases, such as improving the condition of existing tenements and the erection of model tenement houses, the creation of parks, playgrounds, public baths, gymnasiums, etc.

After I had received the signatures to the appeal for the formation of an antituberculosis society or committee, of the eleven above mentioned physicians and added my own, I called on Professor Edward T. Devine, the Secretary of the Charity Organization Society, who at once realized what a tuberculosis committee could accomplish when working under

the auspices of the Charity Organization Society. It was a good thing for the antituberculosis movement in New York that the first officers of this committee, that is to say, the chairman and secretary, were two laymen, experienced in practical philanthropy. The honorable Charles F. Cox, a distinguished and active member of the Charity Organization Society, became the tuberculosis committee's first chairman, and Professor Devine served as the first secretary.

This committee has since grown to considerable proportions. It consists now of 41 active members besides a director, Mr. Lawrence Veiller, and a salaried secretary. More than half of the members are physicians and tuberculosis specialists; among the other members are prominent social workers, the heads of several municipal departments and representatives of leading charitable institutions.

Since the establishment of the New York Tuberculosis Committee, tuberculosis associations have been formed in Boston, Chicago, Cleveland and other cities, so that on January 1st, 1904, there were about 24 associations.

In February, 1905, I published in the *Journal* of the American Medical Association, a report entitled, "The Present Status of the Antituberculosis Work in the United States." I counted then 49 antituberculosis bodies calling themselves associations, societies, committees, or leagues. In May, 1905, in Washington, was held the first meeting of the National Association for the Study and Prevention of Tuberculosis under the presidency of Dr. Edward L. Trudeau. Dr. William Osler, now of Oxford, and Dr. Hermann M. Biggs of New York were the vice-presidents; Dr. Henry Barton Jacobs, the Secretary, and Surgeon-General George M. Sternberg, the Treasurer. Soon after this an Executive Secretary in the person of Prof. Livingston Farrand was appointed and it is largely owing to his energy that at the end of 1906 there existed as many as 62 antituberculosis associations. The year 1907 added 49, the year 1908, 106, and on May 15, 1909, Dr. Farrand kindly tells me that 73 associations have been added since December, so that there are at present a total of 290 antituberculosis associations in the United States.

These associations are all composed of lay and medical men and women. It would seem that this speaks well for the growing interest in the antituberculosis cause. The present membership of the National Association is over 2,100.

From January 25th to February 1st, 1904, the first tuberculosis exhibition in the United States was held in Baltimore, Maryland. This exhibition was such a complete success that soon similar exhibitions were created for the purpose of giving graphical illustrations of the cause and prevention of tuberculosis by photographs, charts, models, instruments and various devices. In 1906 the New York Committee had its own tuberculosis exhibit which was shown in different parts of Greater New York. Similar exhibits were established in various parts of the country,

one of the most important being that shown in Washington at the meeting of the National Association for the Study and Prevention of Tuberculosis, in 1907, which has since been taken to various States in the Union.

Interesting and instructive as these traveling exhibitions were and are, the International Tuberculosis Exhibition which was held during the International Congress on Tuberculosis in Washington from September 21st to October 12th, 1908, surpasses anything of the kind which has ever been shown in the world. This exhibition was brought in its entirety from Washington to New York and remained here for two months. From here it has been sent to Philadelphia where it was exhibited during February and March.

This wonderful exhibition consists of charts, photographs, maps, models, diagrams and all sorts of paraphernalia that have to do with the prevention, study and treatment of tuberculosis. Exhibits are shown from 15 different countries and from 200 associations and individuals. All in all, the exhibition includes nearly 5,000 units. It takes 50,000 square feet of floor space and 11,000 square feet of wall space for the display of the exhibition. Ten special cars and over 1,200 packing cases are required to transport it. While the exhibition was in Washington it was estimated that it was seen by 50,000 visitors. During the two months while this exhibition was open to the public in New York it has been visited by three-quarter million of people. It may be a surprise to many to learn that a visit of 30,000 a day was nothing unusual.

To see this exhibition in Washington, 7,000 members of the International Tuberculosis Congress, physicians and sociologists, came from China and Japan, from Australia, from all parts of Europe and the United States. To them it was ocular demonstration of the world's progress in the fight of tuberculosis. This exhibition was brought to New York from Washington intact at a cost of over \$30,000.00. We owe the privilege of having had the exhibition in our midst mainly to the generosity of a number of philanthropists of our city who were inspired by Dr. Alfred Meyer's enthusiasm for the work, to the wisdom and foresight of our aldermen, Comptroller Metz, His Honor, the Mayor of this city, and last but not least to the trustees and officers of the American Museum of Natural History and Professor Henry F. Osborne, its distinguished president.

An additional important educational feature of all these exhibitions is the course of popular lectures always given in conjunction with them and accompanied by practical demonstrations. Thus, for example, in New York there have been physicians' mass meetings, medical students' meetings, mass meetings of public school teachers, domestic science workers, street railroad employees, trained nurses, settlement workers, post-office employees, policemen, firemen, street cleaners, college students, private school children, department store employees, etc.

A most encouraging sign of the general interest in the crusade against the great white plague was manifested recently by the sale of the Red Cross Christmas stamp. According to reports kindly furnished me from the headquarters of the American National Red Cross, about \$110,000 were collected, which means that 11,000,000 Red Cross Merry Christmas and Happy New Year stamps were sold within the short space of a little more than one month. The proceeds in each state from the sale of the stamps have gone toward the tuberculosis work of that state and particularly for tuberculosis work among children.

According to the annual report of the National Association for the Study and Prevention of Tuberculosis, the year 1908 saw the most successful organized campaign against tuberculosis in the history of medicine. Measured in money, the report says, the fight against "the great white plague" in the United States cost more than a million dollars during the last year.

The workers against the disease number hundreds of thousands who have joined the ranks during the last twelve months. More institutions and organizations have been established in the same period to array themselves against the disease than had been enlisted in the cause in all time before January, 1908.

All classes of people have taken up the fight. The labor unions are numbered among the most desperate enemies of the disease. Churches and clergymen have mustered their forces against the common foe.

The growth of the antituberculosis movement in the United States has been truly marvelous of late and the interest of the people at large has been particularly gratifying to the physicians who have endeavored for years to solicit the coöperation of non-medical men and women in the combat of tuberculosis, a disease which has just as large a social as it has a medical aspect.

To be strictly historical, however, it must be said that some of us physicians have not always been willing to recognize the importance of considering tuberculosis an infectious and communicable disease, nor that its effective control is impossible without the harmonious working coöperation of the physician and the health department.

My esteemed friend and teacher, Professor Hermann M. Biggs, M. D., the General Medical Officer of the New York City Health Department, the pioneer of the municipal control movement, to whom a great deal of credit is due for the marvelous reduction of the tuberculosis death rate in New York, states the matter comprehensively when he says: "The efficient administrative control of tuberculosis requires:

1. The compulsory notification of all cases.
2. The free bacteriological examination of the sputum in all instances of suspected diseases in order to facilitate the early and definite diagnosis of pulmonary tuberculosis.
3. Educational measures by the distribution of circulars designed to reach different classes of the community, directly with the aid of em-

ployees of the health department or by the coöperation of tuberculosis committees or associations.

4. The visitation of the consumptive patients in their homes by district nurses.

5. The disinfection or renovation of rooms or apartments which have been vacated by consumptives either by death or removal.

6. The repeated visits by district nurses of the tuberculous in the tenement houses when for any reason it has been undesirable or impossible to remove the patient to an institution.

7. The distribution of suitable food, especially milk and eggs, to the families of the tuberculous in destitute circumstances.

8. The provision of free dispensaries, hospitals for the care of advanced cases, sanatoria for the treatment of earlier and more hopeful cases.

9. The prohibition of admission and treatment of tuberculous patients into general wards of general hospitals.

10. The enactment and enforcement of regulations prohibiting spitting in all kinds of public conveyances, such as street cars, steam railroad cars, ferry boats, etc., and on the floors of public buildings and places of public assembly, such as ferry houses, depots, etc., and in the halls of tenement houses, theaters, in factories, etc. Spitting on the sidewalk should also be prohibited."

What has been the result of the coöperation of the New York Health Department's work with physicians, philanthropical societies, philanthropical individuals and the community at large?

It must be remembered that real active tuberculosis work on the part of the New York Health Department began in 1887, when the two consulting pathologists of the department, Professor T. Mitchell Prudden, M. D., and Professor Hermann M. Biggs, M. D., advocated the adoption of measures almost as comprehensive as those now in force. (However, it was only in 1893 that a system of partially voluntary and partially compulsory notification was adopted.) The New York Tuberculosis Committee of the Charity Organization Society was only founded in 1902. Yet during the last twenty years there has been a rapid fall in the tuberculosis death rate in New York City, and this notwithstanding the fact that the conditions in many respects are most unfavorable, because of the very dense population in the great tenement house districts of the city and the large element of foreign-born inhabitants. It should be remembered that in no city of the world is there such a density of population as exists in many of the wards of the Borough of Manhattan. In numerous districts of the East Side the population varies from 600 to 800 or more persons to the acre, whereas the most densely populated districts of Paris, London, Vienna, or Prague have only 400 or less persons to the acre. When this fact is kept in mind the difficulty in reaching the large foreign-

born element of the population, which speak their native tongue and retain their native customs, will be appreciated.

Yet, in spite of all these disadvantages there has been during the last twenty years a decrease of more than 55 (from .67 to .26 per 1000) per cent in the death rate in children under fifteen years from pulmonary tuberculosis and tuberculous meningitis, these being the two forms of tuberculous disease in which an approximately accurate diagnosis is likely to be made in children. It is precisely in this, the youngest portion of the population, that one would first look for definite results from the enforcement of measures for the restriction of this disease. There has also been a decrease in the total tuberculosis death rate between 1886 and 1906—a period of twenty years—of 40 per cent.

A considerable fall in the death rate from tuberculosis has been noted in various countries and cities, and it has been maintained and apparently shown that the decrease was only in a small part a real decrease and was accompanied by an equal increase in the death rate from the acute pulmonary diseases, notably pneumonia. The claim has been made that there has been simply a substitution in the death returns of pneumonia for tuberculosis. Very great care has been taken in New York City to investigate this phase of the problem, and it may be said in the first place that no corresponding increase has taken place in the death rate from the acute pulmonary disease.

For much of the detailed information given above I am indebted to Dr. Biggs' admirable paper "The Administrative Control of Tuberculosis."

While New York has perhaps led in the antituberculosis work in the United States, in justice to the workers in other places it must be said that a goodly number of American cities through their health officers or by their tuberculosis committees or associations have also done most creditable antituberculosis work and materially helped to reduce the death rate in their localities.

It remains now only to mention the status of dispensaries and special hospitals for tuberculosis in the United States and show their gratifying increase. According to the records of the secretary of our National Association for the Study and Prevention of Tuberculosis, before the year 1905 there existed throughout the United States 115 sanatoria and special tuberculosis hospitals. In the year 1905, 15 of such institutions were established; in 1906, 17; in 1907, 35; in 1908, 71, and since then to May 15, 1909, 45 have been added, so that we have to-day in the United States all told 298 institutions where patients are housed, boarded and kept under constant medical supervision. These institutions are justly called "closed establishments," that is to say, they are exclusively consecrated to tuberculosis cases and no other class of patients are received there.

For the treatment of ambulatory cases, that is to say, patients still up and about, often able to work but who for various reasons cannot

be received in sanatoria or special hospitals, there existed before 1905, 19 tuberculosis dispensaries. During the year 1905, 5; in 1906, 11; in 1907, 51; in 1908, 86, and since then to May 15, 1909, 50 of such tuberculosis dispensaries were added so that to-day there are no less than 222 special tuberculosis dispensaries in the United States.

Besides such tuberculosis dispensaries, there are in the United States at this moment a few institutions such as day camps, night camps, and the class treatment for the tuberculous poor. The term day camp defines itself. Tuberculous patients go in the morning, or are taken in an omnibus, to the camp, which is usually situated at no great distance from the city, but in a healthful locality. There the patient rests on a comfortable reclining chair during the day, is watched over by trained nurses and visited, treated and carefully instructed by an experienced phthisiotherapeutist. A substantial meal at midday and an afternoon luncheon are given to him.

Night camps are for the purpose of enabling tuberculous patients who are at work during the day to sleep in good, well ventilated quarters and thus prevent them from reinfecting themselves or infecting others in densely crowded homes or lodging houses. These night camps are, of course, also under medical supervision and physicians and nurses are in attendance.

This in brief is what has been done in the United States and it entitles us to look upon the tuberculosis problem with a certain degree of hope that the mastery over the disease may become possible.

Now let us consider the greatest needs which, in our opinion, present themselves at this moment and which we must remedy if we are in earnest in our attempts to solve the tuberculosis problem in all its aspects.

First of all, there is an urgent and crying need of more sanatoria and hospitals for tuberculous children. In our own great city of New York, in spite of its admirable work for the consumptive adults, provisions for tuberculous children have been utterly neglected. There are in New York at least some 4,000 tuberculous children suffering with the various forms of either surgical or pulmonary tuberculosis, but besides our little Seabreeze Sanatorium with its 54 beds, there is as yet in New York not a single institution devoted to the care and treatment of tuberculous children. A similar condition prevails throughout the United States. Yet the curability of tuberculous children is even greater and the cures more lasting than in adults.

I pleaded first for such institutions at the time of McKinley's death. I suggested as a McKinley memorial a seaside sanatorium with pavilions for each state, for the treatment of children suffering from tuberculous or scrofulous diseases, or predisposed to consumption. For myself, I believed then, and believe to-day, that we could not honor our martyr president better than by erecting to his memory such life-saving institutions for children. Our good McKinley had two children and these

he lost. He dearly loved little children, and the creation of a sanatorium for the treatment and prevention of a disease with which so many American children are afflicted would surely be as fitting a memorial to this great man and lover of children as the monument of stone erected in Dayton. "McKinley Sanatorium for the Treatment and Prevention of Tuberculous Diseases in Children" should be the name of the institution suggested. The meaning of the name William McKinley, written on the portals of these houses of hope for many a suffering mother's heart, would be made clear to the little inmates by their teachers and grown-up friends.

In letting the children of parents of means who are well and happy bring their mites toward a movement of this kind, a lesson of charity and patriotism might be taught to them as well. There will be found in every community responsible and patriotic citizens to take this matter in hand and bring it to a successful issue. Each State could contribute enough to have its own pavilion to which to send its children. The Atlantic and Pacific coasts should be dotted with such institutions, one or two pavilions for each state, according to its needs. Good schools should be attached to these sanatoria so that the intellectual development of the children might not suffer.

What to my mind is as much needed as a sanatorium for the care of children already tuberculous, is an institution for children of tuberculous parentage who are not yet tuberculous but strongly predisposed to the disease. It has often enough been demonstrated that by timely preventative treatment these children can grow up to become strong men and women and useful citizens in the community. When the parents of such children are poor and obliged to live in crowded quarters, the children almost invariably become tuberculous by post-natal infection. Since it is extremely rare that a child comes into the world tuberculous, the large number of tuberculous children of tuberculous parents can only be accounted for by infection after birth. Proper bovine and milk laws and their strict enforcement is, of course, also of paramount importance if we wish to diminish tuberculosis in childhood.

As an important preventive measure in the spread of tuberculosis, our authorities must be more careful to separate the tuberculous prisoner from the non-tuberculous prisoner and to give the former the best possible care so that he may leave the prison not only morally but also physically a better man. To expose the non-tuberculous prisoner to the danger of contracting the disease is a crime which society has no right to commit. No matter how great or terrible the crime that has caused the prisoner's confinement, while society has a right to punish him, we are ourselves criminally responsible if we expose the morally diseased to the danger of contracting tuberculosis in addition. There are prisons in which the percentage of tuberculosis varies from 25 to 40, and I am glad to state that some prison authorities have realized the seriousness of the condition by separating the tuberculous from the

non-tuberculous inmates, by establishing special wards for the more advanced cases and agricultural colonies for the early ones. The same care should of course be exercised in reformatories, asylums for the insane, almshouses, orphan asylums, nunneries, cloisters, boarding schools, etc.

The periodic examination for tuberculosis of all teachers and pupils at our public schools is of course likewise of paramount importance and so is the provision for special schools where tuberculous teachers and tuberculous pupils may find opportunity to do their duties without endangering others and may be cured at the same time.

The necessity of the examination for tuberculosis of all employees of factories, workshops, department stores, federal, state and municipal governments, etc., must, of course, be evident if we wish to solve the tuberculosis problem in earnest. It is by the early discovery of the disease and the timely and appropriate treatment that the greatest number of lives are saved.

What an economic gain the saving of these lives would mean to the United States has been graphically described by Dr. Irving Fisher, Professor of Social Economy of Yale University, in an interesting paper read last October at the International Tuberculosis Congress in Washington. He estimated the death rate from tuberculosis in all its forms in the United States at 164 per 100,000 of population, and the number of deaths in 1906 as 138,000, and he summarized as follows: "At this rate, of those now living in the United States 5,000,000 people will die of tuberculosis. The average age at death for males is 37.6 years; for females 33.4 years. The expectation of life lost (though estimated on a specially high mortality rate) is at least 24 years, of which at least 17 fall in the working period. The average period of disability preceding death from tuberculosis exceeds three years, of which the latter half is a period of total disability.

"The money cost of tuberculosis, including capitalized earning power lost by death, exceeds \$8,000 each death. The total cost in the United States exceeds \$1,100,000,000 each year. Of this cost about two-fifths, or over \$440,000,000, falls on others than the consumptive. An effort to reduce the mortality by one-fourth would be worth, if necessary, an investment of \$5,500,000,000."

If we add to this economic loss the tears and sorrow caused by the untimely deaths of many a useful member of the family, the mental and physical suffering of millions of our fellowmen, may we not well say it is time to bid halt to a useless slaughter?

Tuberculosis is a preventable and curable disease. What can be done by lay and medical men in uniting to form antituberculosis societies has been already stated. But there are a great many more of such societies or committees needed. For the treatment of the thousands of cases, children and adults, which should be taken care of in institutions, we need more sanatoria and special hospitals; for the thousands of

cases among the poor which in the meantime must be treated at home, we must institute the class method similar to that of the Emmanuel Church which consists in providing the best possible hygienic, dietetic and open air treatment in the home of the poor under the direction of an experienced physician and trained nurses and the help of friendly visitors.

It has been my privilege to become acquainted with the Emmanuel Church work as far as tuberculosis is concerned. That there may be no misunderstanding regarding my position in the matter and that of the clergymen or physicians connected with that movement, I will terminate this article with an impartial and unbiased exposition of my views on the subject. There is no doubt that the work of the Emmanuel Church people, and I mean by church people the clergymen, physicians and laymen who united in the work, has been surprising and the results are not only astonishing in nervous and mental diseases but also in tuberculosis. Dr. Joseph Pratt, one of the medical men in charge of the tuberculosis class of the Church, reports as much as 80 per cent of cures of pulmonary tuberculosis, composing all the stages of the disease. While I have never for a moment doubted the accuracy of their so unusually favorable statistics of cures, I was interested to find out why it was possible for these men to obtain and to do what to the best of my knowledge has never been attained or done before. I did not inquire how they cured the habitual drunkard, the hysteric, the mentally depressed or those afflicted with functional disorders, but I did want to learn all I could about their phthisiotherapy. In the true spirit of humanity and of brotherly love, they made no secret to me of their methods and I gladly state them here. The above mentioned 80 per cent of cures relates to 28 cases of pulmonary tuberculosis in various stages of the disease. They have been treated for two long years in classes in or near their homes after the most improved hygienic and dietetic treatment with rest in the open air, constant supervision by nurses under the guidance of an experienced phthisiotherapeutist.

This much for the medical treatment and what was done for the patient's mental and physical comfort. Without imposing their religious conviction, the doctors of divinity went among these patients and assisted by friendly visitors, inspired them with hope and comfort, talked to them of home, children, wives and husbands. Then the friendly visitors looked after the wives and children, mothers or sisters in the home. In all instances when the breadwinner was the invalid, these good women took it upon themselves to see that there was nothing wanting in that home that was without a breadwinner. In other words, the invalids and their families were taken care of by the Emmanuel Church people for two years. Perhaps never before in their lives had these individuals so much peace of mind, happiness and contentment as when lying on their reclining chairs taking the rest cure in the open air and thinking of their well-provided family and their prospective recovery. And all

this without being away from home. The element of nostalgia (homesickness), so distressing to many sanatorium patients, did not exist. Herein lies the success of the Emmanuel Church movement as far as tuberculosis is concerned. Will it be necessary for the general practitioner in order to cure tuberculosis, to imitate the Emmanuel Church movement in all its details and will he not be able to obtain similar success without calling in the brethren of the church? I have already said how greatly I respect and admire the work done by the Emmanuel Church, but this will not prevent me from making the following statement: I firmly believe that if the family practitioner can interest philanthropists, noble hearted men and women inside and outside of the church, to help him, he need not be discouraged. If he can find a congenial clergyman who, remaining in his sphere of comforting the soul, is willing to help, he should by all means welcome him and work with him. However, I do not think it is of great import whether the physician or the clergyman gets the means together to enable the former to treat his consumptive poor for two years and to provide for their families for the same space of time.

If I were to make a suggestion, I would venture to advise those who intend to interest themselves in the treatment of the consumptive poor to follow the example of our brethren in Germany. They presented the cause to the women of Germany who responded in various sections by organizing themselves for the purpose of giving systematic and practical help to families whose breadwinners are incapacitated by tuberculosis. I refer here particularly to the society known in Germany as "Patriotische Frauen von Charlottenburg" (Patriotic Women of Charlottenburg). This organization works under the auspices of the German Red Cross Society.

What a useful field of labor this would be for our own Red Cross associations in time of peace.* They could thus help to combat an enemy far more terrible, far more murderous, far more costly than the mightiest army of the mightiest nation. A work more patriotic and more helpful toward the solution of the tuberculosis problem it would be difficult to conceive. A movement of this kind would by no means exclude the collaboration of the doctors of divinity or Sisters of Charity. There is a second organization working for the same purpose, called "German Lay Sisters of Charity." But whoever works with the physicians, be they patriotic women, mothers, wives, sisters or sweethearts, whether they work with or without the clergy, if they have the means necessary to spare the patient anguish, anxiety and sorrow, and give him the best in phthisiotherapy as long as he needs it, I have no doubt that their results will equal those of the Emmanuel Church.

However, to attain these results, they must have not only the material means but a complete knowledge of phthisiotherapy. They must have

*See *New York Medical Journal*, Nov. 28, 1908: "The Red Cross in the Anti-tuberculosis War."

coworkers not only of material wealth but of wealth of heart and mind, and above all, the physician himself must be a picture of perfect health, an inspiration of hope, an example of good cheer, of genuine sympathy and of complete devotion.

From the foregoing it would seem that if federal, state and municipal governments will unite with private enterprises in the combat of tuberculosis, if the medical profession, the clergy and the layman will do their duty, if the population at large would be so educated that they all can be helpful in this work, there is no reason why we should not prophesy a complete eradication of tuberculosis as a disease of the masses. To be brief, it may be said that what is necessary to attain this end is the combined action of a wise government, well trained physicians and an intelligent people.

SPECIAL ARTICLE.

DIAGNOSIS AND TREATMENT OF INTRATHORACIC EFFUSIONS.*

By ELSWORTH SMITH, JR., M. D.

The most difficult problem that the internist faces before calling upon the surgeon for advice in the treatment of these conditions is that which confronts him when the question arises as to whether he has to deal with effusion in the pleural cavity, or a consolidation in the lung. This is especially true of patients in early life and particularly in children. In the child when the pleural cavity is completely filled, all the physical signs may seem to point to consolidation, that is, all the physical signs with one exception, and which is, in my judgment, one of the most important points of differentiation between effusion and consolidation; I refer to tactile fremitus. I have frequently seen cases in which all the indications pointed to consolidation with the exception of this one sign. Recently I had a case of empyema which presented many of the symptoms pointing to a pneumonic consolidation, including bronchial breathing, and the diagnosis of pneumonia had been made. There was diminished fremitus and some displacement of the heart. The partial disappearance of the fremitus, taken in conjunction with the full history of the case, induced me to advise puncture, which was done by Dr. Mudd, and the presence of an empyema established. That case illustrates the difficulty we often meet in arriving at a differential diagnosis between effusions in the pleura and consolidations of the lung, especially in children, although we may meet with the same kind of trouble in adults. An instance of this kind occurred at the City Hospital, the case causing a very lively discussion among the entire staff as to whether the condition was consolidation of the lung or effusion in the pleura. There was marked extensive bronchial breathing, but diminished fremitus and displacement of viscera. Aspiration discovered the fluid.

Another class of cases which presents great difficulty in arriving at a correct diagnosis is met with when there is present a consolidation of the lung tissue, with a filling up of the bronchial tubes and a shutting off of air from the lung. Such a condition is occasionally seen in pneumonia, but the cases giving us the greatest difficulty are those in which we have to differentiate a malignant condition of the lung, with or with-

*A discussion by the members of the St. Louis Surgical Society and the St. Louis Society of Internal Medicine in joint session, March 10, 1909.

out effusion. Not infrequently we see cases of malignancy when all the signs point distinctly to effusion in the pleura. There is an infiltration of the large bronchial tubes which shuts off the air from the lung and the question arises whether we have a consolidation of the lung or an effusion in the pleura, as frequently these two conditions exist coincidentally. Of course the only method of differentiating, under such circumstances, is by aspiration of the pleural sac.

One point I should like to bring out clearly is in reference to the value of the change of the line of dullness observed in pleuritic effusion with the change of position of the patient. Cabot, in his work on physical diagnosis, states that he attaches very little importance to this sign. Notwithstanding this assertion by Dr. Cabot, I have come to rely upon this observation in differentiating between consolidation of the lung and pleural effusion as being, perhaps, more important than any other single sign, excepting the tactile fremitus. In addition to these signs I believe another most valuable indication in differentiating between fluid in pleura and consolidation of the lung to be the displacement of the viscera, especially of the heart and liver.

I believe, furthermore, that a blank aspiration, even though done by the surgeon, does not always mean the absence of a fluid in the pleural cavity. This fact was impressed upon me in a case which Dr. Mudd and I saw together. The patient had been seen by several internists, who had performed thoracentesis several times without obtaining any pus, and had therefore excluded empyema. When the case came under the care of Dr. Mudd and myself at St. Luke's, I mentioned my experience in regard to blank aspirations, and said that I believed the signs still spoke for pus in the pleura. The patient was anesthetized and aspirated without result at first, but upon increasing the suction as much as possible, one drop of pus was obtained; upon this evidence the pleura was opened and the pus located.

The dread that is always uppermost in the mind of the internist, when contemplating an operation for exploring the pleura, is the fear of an artificial pneumothorax, and I believe the surgeons do not, as a rule, feel any more comfortable than we do under such circumstances. I should like to hear from them further upon this point as to whether we may feel perfectly justified in opening the pleura, even though aspiration has not established the presence of fluid or pus, and also whether the danger of an artificial pneumothorax is great enough to make the operation a hazardous procedure.

DISCUSSION BY DR. W. E. FISCHER.

Surely the internist has been persuaded that the surgeon is capable of taking a very broad view of medicine. It must have suggested itself to the surgeons, as it has to me, that it might be well, in the light of modern medicine, to regard the erstwhile internist chiefly a diagnostician.

We all realize when such a subject as "Diagnosis and Treatment of Intrathoracic Effusions" comes up for consideration, that the important task of the internist is a diagnostic one. The diagnosis having been made, the internist is willing enough to confer with a surgeon on the propriety of surgical interference.

To review in this Society the diagnostic points of hydrothorax in connection with pleural effusions, might appear elementary. Physical signs would usually declare typical cases. However, physical signs alone can easily mislead. I would, therefore, remind ourselves of the great importance of a carefully considered history, as well as the symptoms, and a study of temperature curves. Who among us has not been in doubt in differentiating between pneumonia and pleural effusions? The most expert among us, with reference to physical diagnosis, and the most pèdantically careful observer of symptoms, must needs frequently resort to the laboratory before a diagnosis of pleural effusion versus lobar pneumonia can be established; and, even then, an exploratory puncture alone will solve the doubt. Theoretically, the physical signs alone should answer. But, who has not met with cases of pleural effusions in which vocal resonance, vocal fremitus, and even bronchial breathing are present, and breath sounds not seriously modified? On the other hand, the classical, physical signs are not always in evidence in pneumonia. In both conditions skodaic resonance may be present. It may be especially difficult to differentiate a pneumonia away from the periphery of the lung, with a slight fibrous pleural thickening, from a pleural effusion. When signs of displacement of the heart, liver and spleen can be determined in conjunction with signs and symptoms that justify a picture of effusion in the pleural cavity, the diagnosis is not difficult; but, fortunately for the patient and unfortunately for the diagnostician, pleural effusions, even of a relatively high degree, do not always bring about displacement of these viscera. And then, too, we must not be unmindful of the fact that the heart may be displaced by consolidated lungs.

Must the stamp of the surgeon's approval go with our own judgment before resorting to the final test of exploring for fluid when the diagnosis is still in doubt? And if so, can the surgeon give the internist the assurance that his efforts in locating fluid in the pleural cavity is any more certain of results than that of the internist? Or, will not the surgeon and internist have to make confession that the picture of fluid in the pleural cavity, drawn with all the skill of the careful diagnostician, its lines and outlines so well determined that there remains no reasonable doubt of its immediate location, will fail of demonstration even after the invasion of the cavity with the cannulated needle of the aspirator?

The next question, in which the patient is more particularly interested—if fluid is demonstrated in the pleural cavity—is, when should the cavity be emptied of the fluid? I am not ready to consign to the surgeon patients with serous pleural effusions. We all know that absorption of serous effusions frequently takes place. Should we not also be mind-

ful of the fact that surgical accidents do occur in even so simple an operation as thoracentesis?

Of course, there comes a time for surgical interference. It is imperative to enter the pleural cavity early, if there is a suspicion of a neoplasm. It is no less imperative to empty the pleural cavity if pus, be the cause what it may, be present. This character of an effusion can often be determined before operation by taking a careful anamnesis and making a careful study of bedside notes. This point the internists will agree upon. Whatever the character of the pleural effusion may be, if the volume be large, thus interfering with the subjective comfort of the patient, or if there is reason to fasten the diagnosis of an empyema on your patient, call in the surgeon and have him share the responsibility by exercising the surgeon's prerogative of using the knife or the aspirator.

By ALBERT E. TAUSSIG, M. D.

As an adequate discussion of the subject would take up far more time than is at our disposal, I shall call attention merely to the place of the laboratory in the diagnosis of intrathoracic effusions. I realize that the anamnesis and the physical examination are incomparably more important than the laboratory work, but the latter does give us information that is often distinctly worth while.

The method known as cytodagnosis is frequently of value. The pleural fluid is centrifugated before it has had time to coagulate, the sediment is spread upon a slide or coverglass and stained, preferably with Jenner's stain. A lymphocytosis speaks for a tuberculous process, the presence chiefly of neutrophils for pus infection, while large numbers of endothelial cells indicate a transudate rather than an exudate. The responsible microorganism can often be found if careful search is made for it.

A method in which I have been much interested of late, consists in depositing a drop of the sediment upon some Loeffler's culture medium and incubating at 55°. This can conveniently be done in a paraffine oven. The sediment from an effusion due to a pyogenic microorganism will digest the culture medium, causing a cup-shaped depression; a tuberculous exudate will produce no effect upon the medium. This phenomenon depends upon the fact that the neutrophil cells present in pus infections produce a proteolytic ferment, while the lymphocytes, characteristic of tuberculous exudates, do not.

By DR. HORACE SOPER.

The difficulty experienced in attempting to locate the effusion in the pleural cavity by means of the aspirator, as has been pointed out by Dr. Smith, reminds me of a case of a child with symptoms pointing to

fluid in the chest. After a general practitioner had punctured in various directions, an internist was called, who also failed to find pus. One day the child, while running about the yard, coughed up pus. The case illustrates the point,—that we should not give up, when the symptoms indicate a collection of fluid in the chest, even though the general practitioner, the internist and the surgeon all fail to demonstrate the location of the accumulation. In such cases I believe we will find the *x*-ray of considerable assistance in clearing up the diagnosis; and particularly in cases where the collection of pus has become encapsulated radiosopic examinations are successful in depicting shadows which indicate the location of pus. The *x*-ray will also be a valuable means of determining the presence of mediastinal growths, with or without effusion, and as a means of differentiating between encapsulated effusions in the mediastinum and solid growths.

By WALTER FISCHER, M. D.

My personal experience in cases, the nature of which is under discussion, has been chiefly confined to observation of the results—the successes and failures—of other men, and therefore I have little in the way of personal experience to draw from. I am very glad, however, that the *x*-ray has been mentioned as a means of differential diagnosis. While in Berlin last winter the use of the *x*-ray as one of the methods of physical diagnosis was emphasized very strongly by Prof. Kraus; and, in fact, he said he did not consider a physical examination complete until an *x*-ray examination had been made.

In regard to the change of the area of dulness, with the change of position of the patient in pleuritic effusion, as a mark of differentiation from consolidation of the lung, one of the assistants of Prof. Kraus showed a number of photographs by means of which he was able to demonstrate a collection of fluid in the cavity and a consolidation in the area of lung adjacent to the pleura. In these cases he said there was no great change in the position of the tumor associated coincidentally with change of position of the patient. If the collection of fluid was absolutely free in the cavity, typically seen in hydropneumothorax, we would get, in addition to the line of dulness, an absolutely horizontal line in the plate. By studying *x*-ray pictures we should be able to differentiate more clearly between effusions alone and effusions existing secondary to or in conjunction with a consolidation of the lung. In some few cases I have noticed in encapsulated empyemas where we have bronchial breathing with absence of tactile fremitus, that we have an increase in the whisper more than in the spoken sound. In the cases that I have seen I have laid stress upon that sound and in several cases the diagnosis was confirmed by exploration.

By H. G. MUDD, M. D.

In regard to the dangers of pneumothorax, following an exploration of the chest which fails to reveal the presence of effusion, some practical experience has caused me to consider that the danger is slight, and the probability of its occurrence generally overestimated. This was well illustrated in a case upon which I performed the Halsted operation, in which the pleura was extensively opened and a suction of air into the chest occurred when the opening was made. I immediately covered the aperture and finished the operation, but the patient showed no symptoms whatever of disturbance due to the introduction of the air.

Referring to the statement made by Dr. Myer, relative to the existence of pus in the pleural cavity, which had its origin outside of the cavity, it has been my privilege to see several cases where there was a breaking of an abscess from below; an abscess in the liver, or possibly an appendical abscess breaking into the thorax. In these cases the diagnosis is sometimes extremely difficult to establish. The diagnosis of an abscess in the liver rupturing into the thorax is not, as a rule, such a difficult matter, but if allowed to go unrecognized for some time and the pus break into a bronchial tube, the diagnosis is complicated very seriously and often makes an exploration absolutely necessary. I can recall cases in which it was impossible to determine the condition exactly, but other evidence left no doubt of the existence of pus in the liver, in the thorax, or in the subphrenic space. An exploratory operation in the mid-axillary line, exposing the diaphragm and the lower portion of the pleural cavity, enables the surgeon to locate the pus collection definitely. In these cases we could determine, either by aspiration or examination, the presence of pus and get at it. Such cases have convinced me that the dangers of pneumothorax are not as great as some have feared they were.

The difficulties of determining the conditions in those abscesses which break from below are very great. An abscess in the liver, breaking into the thorax and bronchus, is not so very rare. The diagnosis between a pleuritic purulent effusion and abscess of the liver is difficult to make. When I was quite a young man, a negro came under my care. There was absolute dulness from the costal border to the clavicle, and upon examination I thought I had to deal with pleuritic effusion. I asked an older practitioner to examine the case, which he did. He agreed with me that there was a large quantity of pus in the chest. I aspirated through the sixth interspace in the axillary line and drew off quite a quantity of pus, but there was a suspicious appearance to the pus, due to the fact that there were large masses in it, which led me to suspect that the case was one of abscess of the liver. A microscopic examination confirmed this suspicion. The enlarged liver had pushed the lung up, but the liver had not enlarged downward. The quantity of pus drawn off filled a water bucket. There was no enlargement of the liver

below the costal margin, but the lung was compressed upwards so greatly that the case had the appearance of an empyema.

I was glad to hear Dr. Myer's remarks in regard to the value of a microscopic examination of the fluid for the purpose of determining whether the affection is of a tuberculous or malignant nature. I recently had a case of malignant tumor of the breast of a good many years' standing, which I removed, doing the Halsted operation. Some weeks after the operation the patient complained of dyspnea, quite marked. Upon examination Dr. Smith found, in the left side of the thorax, unmistakable signs of fluid. We aspirated and drew off 20 ounces of fluid, stained with blood, but whether the bloody appearance of the fluid was due to aspiration or not, I do not know. It is now some three weeks since the fluid was drawn off and there has been no re-accumulation and the patient is apparently well. A microscopic examination of the fluid was made at the time to determine whether malignancy was present or not, but the examination did not result in a definite conclusion concerning the character of the fluid.

I was somewhat surprised to hear Dr. Lutz's remarks about the Estlander operation being so unsatisfactory, since that is quite contrary to my experience with this operation in old empyemas with the lung adherent to the pleura. In many of these cases it seems impossible to secure an ablation of the pus cavity without removing a portion of a number of ribs, but the results, as a rule, are favorable after such resection. Occasionally, however, I have found it advisable, when resection of ribs was not successful in controlling the condition, to do the more severe operation—the Schede operation—with excellent results.

By M. B. CLOPTON, M. D.

A few suggestions have come during the last few years which make it possible, perhaps, in the future to change our method of treatment somewhat by the introduction of over-pressure or under-pressure apparatus, the use of which has led to a new treatment of empyema, and, although I have had no personal experience with the method, very favorable reports have come from the clinics in which it has been used. The impression that empyema must be continuously drained, was gained largely from the fact that when the chest was once opened it was a pretty hard matter to close it and not leave an air space. The use of the under-pressure apparatus or the over-pressure apparatus enables the operator, in cases seen early, before the pleura is a granulating surface, to evacuate the pus and then close up the thoracic wall. Reports from a large number of cases treated in this manner indicate that immediate healing takes place in a large majority of the cases.

By PAUL Y. TUPPER, M. D.

I want to emphasize my belief that pleuritic effusions ought to be dealt with early by aspiration. I do not agree with the statement by one of the internists that this procedure is attended with any considerable amount of danger.

There is one point about the introduction of the tube for the purpose of draining the chest which I believe should be emphasized. Some surgeons endeavor to resect through their first incision, the lowest rib bordering on the cavity. This method I believe is attended with danger. I have seen the peritoneal cavity entered through a thin diaphragm in the effort to remove a portion of the rib at the bottom of an effusion in the chest. At any rate, we are apt to get below the point of pus accumulation if we make an effort in this way to locate the bottom of the cavity. It has been my custom for years, and I teach this method to my classes, in draining the cavity, to go first well above the lowest portion of the cavity and remove a section of rib, then to put the finger in and, after finding the lowest point, resect a portion of rib here. Through these two openings a through-and-through drainage tube, carrying a "drag," is introduced.

By FRANK J. LUTZ, M. D.

At the meeting of the Missouri State Medical Association in 1895, I read a paper on pyothorax, in which I endeavored to lay particular stress upon the clinical symptoms manifested in these cases. The early recognition of an accumulating effusion in the pleural sac, and the means for doing this, I dwelt upon at such length as the importance of the subject warranted; and I endeavored also to call attention to the peculiar conditions of the thoracic wall, as well as the altered visceral pleura, which interfere in chronic cases with the proper expansion of the lung, even after the pleural effusion has been evacuated through an intercostal opening; or by the excision of a portion of the rib.

During the fourteen years which have elapsed since the meeting referred to, two additions have been proposed to the means by which pleuritic effusion, purulent or serous, might be recognized.

The paravertebral triangle of dulness, Grocco's sign, so-called, has been fairly well established as the constant associate of fluid collections in the pleural sac. As you know, it is found on the opposite side from that in which the effusion occurs along the spine, and is triangular in its outline. Quite naturally, more was claimed at first for this symptom than a larger clinical experience has warranted; and, far from being pathognomonic of pleural effusion, wider observation has shown that abdominal conditions,—ascites, subphrenic abscess, subphrenic tumors, solid and cysts,—enable the careful diagnostician to map out Grocco's area of percussion dulness on the opposite side.

The use of the Roentgen ray as a diagnostic means in pleuritic effusion must, in the largest number of cases, be beyond the reach of the practitioner. Of course, with portable x-ray apparatus perhaps a larger percentage than formerly can get the benefit of the shadow which is thrown by a pleural effusion of sufficient density, or which has been rendered observable by intrathoracic injections; but for the average practitioner, interesting and demonstrating as the skiagraph is, it must not be counted upon as a necessary apparatus for making the diagnosis.

I desire this evening to call attention to two things in connection with pleuritic effusion. First, the necessity for the early removal by mechanical means,—aspiration, with recognized precautions,—of effusions into the thorax as soon as symptoms of labored respiration make their appearance, and furnishing an avenue of escape, through an intercostal opening or by the excision of a portion of a rib, to the effusion which is either primarily purulent or becomes so. Whilst experience in the dead-house cannot fail to impress us with the fact that many cases of pleurisy with effusion must have recovered without mechanical intervention, yet experience at the bedside teaches us that the removal of effused serum from a lymphatic sac, especially if that surround such important organs as those surrounded by the peritoneum and the pleura, results in speedier recovery of the organ, the disturbance in which has given rise to the effusion. In other words, increased experience has taught us that a pleuritic effusion, removed early, means early restoration of function to the inflamed pleura and prevents those disturbances, which we dread so much, as the sequelæ in the heart and lungs of patients who are suffering from pleurisy with effusion. A more frequent early paracentesis thoracis will reveal more frequently the primary purulent effusion. The purulent character of the effusion, once established, the patient and his friends rarely, and the up-to-date physician never, hope for its absorption. No clearer demonstration can be made to a patient or his friends than to exhibit to them the hypodermic syringe filled with pus. I believe I am warranted in saying, from my personal observation, that an early diagnosis in pleuritic effusion is made much more frequently than when we discussed this subject fourteen years ago. With local anæsthesia, an intercostal incision, or the removal of a segment of a rib, is no longer an operation of great magnitude.

The next point to which I wish to call your attention is the treatment of the visceral pleura in operations for empyema. I voice the sentiments of surgeons of experience when I say that at best the deforming Estlander operation gives unsatisfactory results. In the past we have paid too much attention to the thoracic wall of the pleural abscess and not given enough attention to the visceral pleura. It is true that formerly, when cases of empyema were long neglected, the physical surroundings of the lung had been so fashioned that the normal expansile property of the lung was entirely destroyed; and quite naturally the occlusion of the abscess cavity was expected to be brought about by the

forcing in of the chest wall, either deprived of its bony structures or with them still attached. With an earlier recognition of the condition on the part of the practitioner, we will observe fewer cases in which the pleural surface has been so enormously thickened as never to be absorbed: I think we have it within our power to assist nature materially in removing the thick swath into which the visceral pleura has been converted, by free incision of the pleura. The former fear of hemorrhage by incising the lung, is not justified by experience. Very decided curetting of relatively recent cases, and free incision of the pleura in strips, I have practiced for the last ten years. If free incisions are made into the visceral pleura, extending down to the lung tissue, or, for that matter, into it, and the resulting grooves are packed with iodoform or sterile gauze, you will observe a wonderful change in the surface of the pleura, even after the first dressing; the gap has become wider in twenty-four hours, and after forty-eight hours you can see distinctly marked, at the bottom of the incisions, the gradually expanding lung. I have seen enough cases to justify the recommendation that, before large portions of the thoracic wall are excised in chronic empyema, incision of the visceral pleura should first be tried. Experience in the operating room also convinces me of the great value of curetting the visceral pleura, which is bound down in the cul-de-sac, formed by the juncture of the ribs, the spinal column and the thoracic pleura, and no possibility for the lung to expand at the time a portion of one or more ribs is excised.

Let me also recall attention to an anatomic point, not often mentioned in the text-books or in the monographs treating of purulent effusions. The older authors referred to spontaneous perforations of an empyema on to the surface of the chest or "empyema necessitatis," so-called; more frequently, no doubt, because they saw more cases which, unrecognized by the attendant, nature endeavored to cure by furnishing an avenue of escape for the pus.

The site at which the "pointing" of the pleural abscess usually occurs has been very accurately described by John Marshall in his "Lecture of Diseases of the Chest Cavity Requiring Surgical Treatment," which was published in the *Lancet*, March 4th, 1882. The following description and illustration are taken from it:

"At the fifth interspace, the arrangement, in ordinary cases of the adjacent muscles is as follows: The external intercostal muscle terminates, as usual, near the costal cartilages, to the outer side of the *spot* in question, at and beyond which, towards the sternum, only a thin fascia covers the internal intercostal muscle; the lesser pectoral which ascends from the fifth rib, is, of course, altogether above the fifth space; the outer border of the rectus muscle of the abdomen passes up to the fifth cartilage, and limits the spot on its inner side; superficially to these parts the thick bundle of the great pectoral, which springs from the sixth cartilage, crosses above this spot, although a few thin

fibres which arise from the sixth rib, and other which blend with the external oblique muscle of the abdomen or with the sheath of the rectus, may pass over it; or the slender upper fasciculus of the oblique muscle itself may cover it. Here, in fact, is a part of the chest wall, below the fifth rib and beneath the nipple relatively unprotected by the adjacent muscles. The internal intercostal muscle, the thin intercostal fascia and the weakest portions of the great pectoral and the external oblique, together with the common fascia, are, beside the skin, the only coverings of the pleural sac in this situation. It is a very

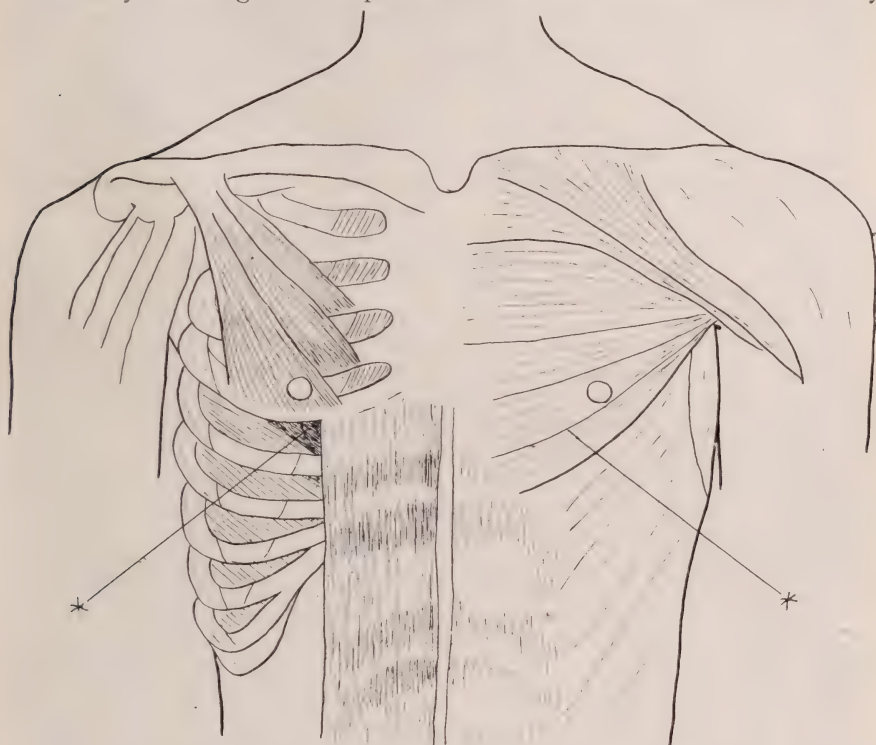


FIG. 4. This diagram shows the weak spot (*) in the chest wall; on the one side with the deep muscles bounding it, and on the other side covered by the superficial layer.

weak part of the pleural boundary, and this is a valid reason why special bulging and spontaneous perforation should occur preferentially in this region—that is, in the infra-mammillary line in the fifth inter-space. It may also be remarked that this spot corresponds nearly with the middle of the pleural cavity when that is much distended.

An empyema may be regarded as a great pleural abscess, and, as we know, abscesses often point opposite their center. It is further true that the fifth intercostal space is wider than those below it, and its limiting ribs being held to the sternum give firmness to its borders, conditions which may help the thinness of the chest wall here in determining the place of perforation. The spaces above are still wider and equally well supported by the ribs, and there is an inter-fascicular part of the great pectoral over the second space which is exceptionally thin, and it is here that perforation is said often to take place in children."

It may not be uninteresting to mention the first recorded case in which an operation was performed in this country, for the cure of an empyema. I quote from the proceedings of the Massachusetts Medical Society*:

"In May, 1756, James Monro, an apprentice to a blacksmith, in Cambridge, was seized with a pleuro-peripneumony. The third day of the disease I saw him, bled him that and the next day, and with the usual treatment, the complaints partially terminated the seventh, by expectoration. I saw him occasionally from time to time, until the 8th of June. He then went to his parents at Lexington, and continued there about fourteen days, in which time he grew much worse. June 27th, late in the evening, I was desired to visit him, and was informed that two days before, when his brother was helping him from his horse, something had broken within him, but had no discharge by the mouth; I was much surprised to find his thorax so largely distended, and attended with vast difficulty of respiration, which threatened suffocation; upon pressure from side to side, or from the back to the breast, there was an evident fluctuation of a great quantity of fluid, and no expectoration. I proposed, as the only method of relief (the operation for the empyema) which I could suggest. He was very averse to it; but after a little reflection, as he was conscious that he was in extreme danger, he consented. Being called so late in the evening, and not being provided for the operation, as I was then three miles from home, deferred it until the next morning. I saw him early, and nothing having occurred to prohibit the evacuation of the fluid, I made an opening of three-quarters of an inch, at the usual place on the left side, as his complaints had been most severe there (no one part being more prominent than the other), and discharged about five pints of thick pus. As he began to faint, I stopped the orifice, and secured the dressings with proper bandages. On the second morning the discharge was about the same quantity; on the third morning about two quarts, and at each time flowed with great violence. On the fourth morning I found him very faint; a great quantity of pus had been discharged; had wet through the feather and straw bed, and near a quart of pus ran on the floor. Upon removing the dressings, I was much surprised to find a part of the lungs (as big as a nutmeg) protruding through the orifice in the side, in a mortified state; and as in desperate cases, doubtful and bold methods may be pursued, I extracted the part of the lungs, until I discovered the termination of the diseased part, and cut it off close to the uninfected part, and then replaced it in the thorax, and secured the dressings in such a manner, as to prevent the like accident again. On the fifth day from the opening his side, he received the fumes of pulv. G. thuris, mastich. myrr et oliban. through an inverted funnel into his lungs by his mouth, and in nine days the fumes passed through his lungs and came out at the orifice in his side; during which time he took no medicine but a decoction of cort. peruv. The abscess and the external opening healed in sixteen days, and he recovered his usual state of health. In the month of October following, he went as a soldier to garrison Fort Cumberland, in Nova Scotia; was there eighteen months; returned in good health, and has followed his business of a blacksmith ever since. He is subject to the asthma, but it is a family disorder."

*A case of empyema, successfully treated by the operation. Communicated by Isaac Rand, Esq., Vice-President of the Massachusetts Medical Society, and Physician at Cambridge, May, 1783.

A CASE OF OSTEITIS DEFORMANS (PAGET'S DISEASE.)*

By WALTER R. HEWITT, M. D., of St. Louis.

The patient, a negro male, laborer, aged 60 years, widower, stated that he had had typhoid fever, rheumatism and scrofula, but denied venereal disease.

The family history was negative.

Present trouble: Two years ago both legs began to swell; the right one steadily, though slowly increasing in size, and painful at the onset of the disease. The patient entered the hospital complaining of dull, aching pain, which had begun, four days ago, in the right ankle, and had involved the leg, but not the knee-joint. He had had a severe cough in the spring.

The general nutrition was fairly good. The head was held somewhat forwards and the chin dropped downwards toward the sternum. The left clavicle was considerably, the right clavicle slightly, enlarged. The right ulna was enlarged, and the right leg, from ankle to knee, was twice the size of the left leg. The patient had a high arched palate.

The chest expansion was 1.5 c.m. The tactile fremitus and vocal resonance were slightly increased, over base of the left lung and over both apices. Auscultation showed few subcrepitant rales over the apices and over the base of the left lung.

The heart was normal, except that the second pulmonic sound was accentuated. The apex beat was not visible. The arteries were markedly sclerotic. The pulse was of good volume, regular, seventy-two per minute. The digestive and genito-urinary apparatus were normal. The scrotum showed a large tympanitic mass, which was translucent and gave an impulse on coughing. Boborygmi were heard over this mass on auscultation. The joints were not involved, and examination of the nervous system was negative.

Skiaographs showed a rarefying osteitis.

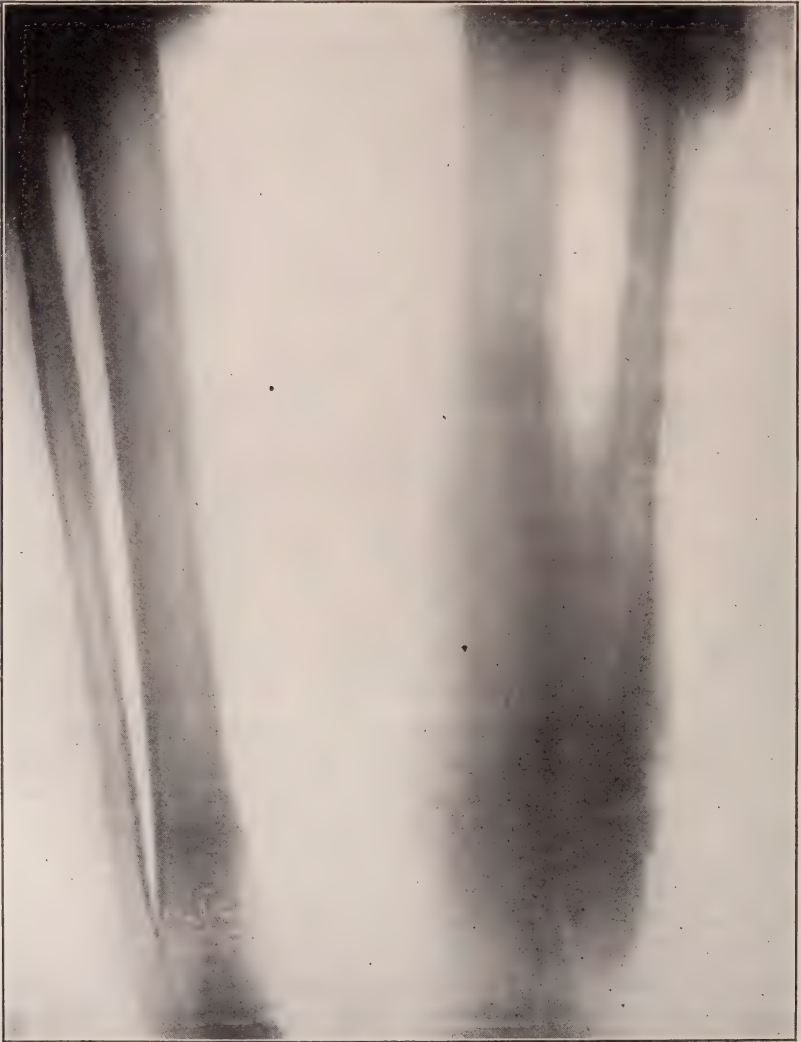
The term, "osteitis deformans," was first introduced by Czerny, in 1873, for a group of cases, which were afterwards shown to be cases of osteo-malacia. Paget's original article appeared in 1876, but it was one year later that he gave us our first clear, clinical picture. It is thought that there are sixty-seven genuine cases reported in the literature, this one making the sixty-eighth.

The etiology of the disease is unknown.

The disease begins as a chronic rarefying osteitis, in which the normal compact tissue becomes finely porous; fresh bone is formed beneath the

*Read before the Society of City Hospital Alumni, Oct. 19, 1908.

periosteum, and finally, in the later stages of the disease, undergoes hypertrophy and partial sclerotic changes. These two conditions, osteoporosis, and osteo-sclerosis, exert considerable influence in bringing about the deformity of the long bones, although we must not forget the effect of gravity and weight on the already weakened bones. As a rule, there is no joint involvement. Well marked arterio-sclerosis is usually present.



SKIAGRAPHS.

Joncheray distinguishes two varieties of the disease, one painless and the other painful. The contour of the patient is changed and he exhibits a peculiar mode of locomotion. He is decreased in stature, the head is advanced and lowered, so that the chin is below the top of the sternum. The chest becomes contracted, narrow, flattened laterally and deep from

before backwards. The arms appear unnaturally long; the skull is increased considerably in thickness for which reason the patient states that his hat is too small for him, and that he has been compelled to buy one a size larger. The shafts of both tibiæ and femora are bent so that the patient becomes bow-legged. The tibia or femur may be bent anteriorly or laterally, and the vertebral column presents abnormal curvatures. If the bones of the arm and chest are involved, the patient may be round-shouldered. Often these patients present a dwarfed appearance. The above description is of a well-advanced case of osteitis deformans. The bones most frequently involved are, in order of frequency, the tibiæ, femora, vault of the skull, clavicles, spine, ribs and radii.

Elting states that the disease occurs most frequently in the tibia, which may be the only bone involved. The bones of the cranium may not be involved at all, especially in the early stages of the disease. The vertex of the skull is more often involved than the base. Careful blood examination, in some cases, has been negative.

The diagnosis in a typical, well-advanced case is easy. In the early stages of the disease a skiagraph is essential to clear up the diagnosis.

The disease is a chronic one, which assumes a slow, but progressive course. This may extend over a period of from five to fifteen years, the patient dying from an intercurrent disease.

Elting states that treatment must be purely symptomatic. Bowlby states that in some instances improvement has followed the use of potassium iodid and of thyroid extract, and believes that these drugs deserve a further trial.

I wish to take this opportunity of expressing to Dr. W. C. G. Kirchner, Superintendent of the City Hospital, my thanks for the interest shown in the preparation of this report.

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MEDICAL AND SURGICAL PROGRESS.

INCREASED INTRACRANIAL TENSION AND ITS RELIEF BY DECOMPRESSION.

A REVIEW OF RECENT LITERATURE.

By MALVERN B. CLOPTON, M. D.

1. A FURTHER CONTRIBUTION TO PALLIATIVE OPERATIONS FOR BRAIN TUMOR.—Spiller (*J. A. M. A.*, January 23, 1909).
2. PRINCIPLES OF CEREBRAL SURGERY.—Cushing (*J. A. M. A.*, January 16, 1909).
3. OBSERVATIONS ON EXPERIMENTALLY INDUCED CHOKED DISC.—Cushing and Bordley (*Bulletin of Johns Hopkins Hospital*, April, 1909).
4. OBSERVATION ON CHOKED DISC, WITH SPECIAL REFERENCE TO DECOMPRESSIVE CRANIAL OPERATIONS.—Bordley and Cushing (*J. A. M. A.*, January 30, 1909).
5. A METHOD OF COMBINING EXPLORATION AND DECOMPRESSION FOR CEREBRAL TUMORS WHICH PROVE TO BE INOPERABLE.—Cushing (*Surg., Gyn. & Obst.*, July, 1909).
6. PROBLEMS AND PROCEDURES IN CRANIAL SURGERY.—Frazier (*J. A. M. A.*, June 5, 1909).

There has been recently, most particularly in the literature in America, much discussion of certain procedures in brain surgery that mark the advances in this field. Decompression measures conducted primarily for the purpose of relieving tension in unlocalizable tumors, and not for exploratory purposes, were planned some time back, but the discussion has been continued by Cushing, and he concisely states that no brain tumor is more favorable for prompt operation of this sort than one which gives no clinical indications of its situation. Many of these cases remained free from pressure symptoms, and have returned after periods varying from one to three years with an onset of symptoms pointing at last toward the situation of the lesion, which in a number of instances has been successfully removed. He lays stress on the following points: That a muscle splitting incision in the temporal region exposes the thinnest and most easily removed area of the cranial vault; that it is over a "silent" area; that an undue protrusion is obviated by the protection of the resutured muscle and fascia; and that except in case a growth is so placed as to produce an internal hydrocephalus, usually a considerable, often a complete, subsidence of symptoms may occur. In a later report the same author has advised the use of an osteoplastic flap which later can be converted into a decompressive operation by the removal of a part of the flap situated beneath the temporal muscle. This method is useful in cases where the tumor is known to be located in a hemisphere, but when

approached it is found not to be removable. To remove the whole bone flap would result in too extensive a hernia or possibly a fungus cerebri should the scalp wound part.

Spiller, in a consideration of palliative operations in cases where a choked disc is the only sign of intracranial disease, quotes De Schweinitz to the effect that there is no marked change in the swollen nerve head after decompression until the tenth to the fourteenth day, two months being necessary for its complete disappearance, the edema of engorgement not subsiding usually under forty-eight hours, the retinal vessels diminishing in congestion usually within thirty-six hours. His experience has been that an operation may give temporary improvement in vision where a choked disc with neuritis is present, but later there was a postneuritic atrophy.

As he believes that a choked disc may be of toxic origin, there is doubt in his mind whether it is well to advise a decompression when choked discs are the only sign of intracranial disease, but if decompression is practiced it should be done early before permanent nerve changes. He is not satisfied that palliative operations would be of any benefit in brain tumor cases that have fallen suddenly into coma.

Frazier gives the operation of decompression a wide application, and does not restrict it only to tumors, but includes, among the indications, epilepsy, chronic meningitis, with or without hydrocephalus and trauma. With tumors we should not be content with purposeful palliation unless the tumor cannot be localized or removed, and an exploratory operation is advised, which can be later made a decompression by removal of part of the bone flap should the tumor not be found. This operation should be done early. He questions the propriety of resorting to decompression in advanced cases in deep stupor, but it is occasionally followed by great benefit. Palliative operations may, in some instances, be followed by severe aggravation of the symptoms, due to hemorrhage into the brain after a sudden relief of the support to which the vessels are accustomed.

Bordley and Cushing, summarizing their views in choked disc, state that early injection, with stasis of the vessels, the marked edema with projection of the papilla, and the ultimate round-celled infiltration with new tissue formation that leads to autopsy, are merely stages of the same process; that is, the process is mechanical, and not toxic. It is due primarily to the crowding into and distention of the sheath of Schwalbe by obstructive cerebrospinal fluid resulting in an edema of the nerve end. They believe that an acute internal hydrocephalus in the closed adult skull almost inevitably leads to a choked disc, but they attribute this to the presence of arachnoid fluid forced into the optic sheath, rather than an edema spreading from the brain to the optic nerve. Furthermore, choked disc is often present with tumors which have not led to hydrocephalus, and is usually absent in the essential hydrocephalus of infancy. A small, slow-growing tumor so situated as to cause hydrocephalus, can lead to a high grade choked disc, whereas a malignant rapidly growing glioma, which causes little pressure, due to the way it infiltrates the brain, may produce no change whatever, even though situated near the optic nerve. Toxic products in the cerebrospinal fluid can hardly be held responsible for any grade of choked disc. Cases have been observed where cella turica tumors have led to optic atrophy without producing choked disc, because fluid was not crowded into the sheath of the nerve. In meningitis, they believe that choked disc is rare, and equally so in abscess unless there is internal hydrocephalus. Further,

the disc is choked frequently after cranial fractures, apoplexies, and not uncommonly after simple operations, when infection can be safely ruled out. Since there is an almost uniform subsidence of a choked disc after a decompressive operation, whether conducted for pressure of tumor, cerebral edemas of any sort (traumatic, nephritic, or vascular) a mechanical rather than a toxic process must play the chief role in the causation of this well-recognized lesion.

Bordley and Cushing, in reporting the results of their experiments on artificial production of choked disc, state that the introduction of fluid under tension into the intracranial subdural space will produce a choked disc that can be observed during life and studied in the tissues after death, and that the same condition can be produced by digital pressure upon the dura beneath a bone defect. They found that these edemas of the nerve-head and retina are associated, under both conditions, with distension of the optic sheath, particularly of the subarachnoid spaces, and that the venous congestion does not seem capable, without concomitant action of fluid under tension in the optic sheath, of producing more than the congestive features of choked disc. Long continued pressure against a dural defect can lead to retinal hemorrhages, and other clinical as well as histological features which characterize chronic choked disc in man. Introducing, between the skull and dura, foreign bodies which are capable of subsequent increase in size, and which possess some elasticity, will closely simulate the action of a new growth, and, placed either above or below the tentorium, will lead to the production of choked disc. They conclude that choked disc is dependent on the pressure of fluid under tension in the subarachnoid space, and that cerebral decompression often allows the process to subside, owing to the resultant diminution of the tension from release of the confined fluid, and that the experimental work corroborates many of the more recent clinical observations in showing that a choked disc, even of a considerable height, may be rapid in its formation, and, provided it has not gone on to the stage of new tissue formation, may rapidly subside, thus speaking strongly in favor of the mechanical as opposed to the chemical or inflammatory origin of the lesion.

Cushing has put the decompression operation to use in a class of cases that have heretofore been considered hopeless, namely, basal fractures with hemorrhage, where he claims that the relief of tension and the drainage of the hemorrhage will give much better results, particularly in those cases without severe laceration of the brain. Frazier, in discussing the indication for operation in cerebral trauma, states emphatically that repeated observations on the human subject in such cases of the blood pressure have given almost invariably negative results; while exceptionally the blood pressure may be elevated, in the majority it is not, even though the symptoms indicate a very serious intracranial injury and the operation weals tremendous intracranial tension. The elevation of blood pressure, so frequently observed in the experimental laboratory, when the cranial contents are mechanically encroached on, is not present under corresponding physical condition in man. Therefore, as a guide to operative intervention, blood pressure observations with our present instruments are practically worthless. He also states that papilloedema, or choked disc, as a manifestation of intracranial tension, the result of trauma, is the exception, not the rule, only two cases of choked disc having been observed in the past two years; therefore, the eye symptoms are not to be considered of any great moment as a diagnostic guide to treatment. In referring to the decompres-

sion operation for the relief of serious contusion of the brain, he is convinced that there is a certain field for its employment, but he disagrees with those that state it should be used in all cases of basal fractures where the symptoms are due to intracranial pressure. Cushing stated that the mortality of basal fractures was 87 per cent., but Frazier found his records show only 59 per cent. He believes that this record could be improved by operating on selected cases. He groups the injured into these classes: (1) Those in which the damage to the brain has been so great that under decompression or not the patient dies. (2) Those in which the symptoms at no time appear serious enough to threaten life, the symptoms persisting for several days show signs of abatement and the patient recovers. (3) Those in which the patient's condition, though not desperate from the first, becomes progressively more serious; unconsciousness deepens, relaxation takes the place of restlessness, respirations become stertorous and Cheyne-Stokes in type, and the pulse slower, both respiratory and circulatory breaks. In this last group of cases he thinks operation ought to be undertaken, and only in this class of cases.

SERUM-THERAPY IN OPHTHALMOLOGY.

A REVIEW OF RECENT LITERATURE.

By JOHN GREEN, JR., M. D.

SERUM-THERAPY IN OPHTHALMOLOGY.—Axenfeld (*The Ophthalmic Review*, January, February, March, 1909).

Axenfeld affirms that, in view of the fact that this new branch of therapeutics has often failed to realize oversanguine expectations, and hence has given rise in some quarters to an exaggerated scepticism, it is proper, from time to time, to take stock of what is already firmly established, in contradistinction to all doubtful hypotheses.

This paper discusses the therapeutic means that modern researches on immunity have placed in the hands of the ophthalmologist, the successes obtained, the rules for dealing with different diseases and the future prospects of the therapy.

The vascular structures of the globe and adnexa will, in future, take part in serum therapeutics as do the other vascular organs. In obstinate blepharitis and formation of hordeola, the subcutaneous application of staphylococcus vaccine will doubtless prove useful, as will the Sobernheim serum in the rarely occurring cases of anthrax.

The conditions are quite unique in the non-vascular refracting media in which bacteria grow with extraordinary ease. Loeffler first pointed out that normal cornea shares in general bacterial immunity, Roemer proved it with regard to pneumococci, and Ehrlich and Roemer in regard to autotoxic immunity to the toxin of diphtheria.

Roemer, Wessely and others have proved that into the normal aqueous humour antitoxins, agglutinins and precipitins pass from the blood, while bactericidal substances (opsonins, hæmolysins and cytotoxins), do not do so at all. Only after puncture or irritation, by means of subconjunctival injections, by heating and especially under the influence of inflammation, is the entrance of these substances to be observed.

Under normal circumstances the vitreous does not share in any kind of immunity whatever. It only begins to show traces of immunity bodies after frequently repeated paracentesis or subconjunctival injections, or during inflammation.

It is upon these facts that Roemer's law of the "Retention of Cytotoxins" is based, and hence an antibacterial serum therapy must experience great difficulties when the infection has extended to the media. It should be borne in mind that the possibility of increasing the intraocular immunizing processes, together with the increased influx from the altered vessels into the media, justifies the employment of serum therapy in corneal and intraocular infection, rather, however, as an adjunct to other treatment than as a main reliance.

Antitoxic serum-therapy. Loeffler's antidiphtheritic serum is curative in diphtheritic conjunctivitis as in diphtheritic membranes elsewhere. Failures with the serum are due either to delay in its use or the presence of a mixed infection. Likewise an incident corneal infection may be

due to the invasion of pyogenic germs, and hence will not be directly influenced by the antidiphtheretic serum. Nevertheless the improvement of nutrition by the diminution of conjunctival inflammation and of the paralyzing action of the toxin may be of value for the cornea. The influence of antidiphtheretic serum in the prevention and cure of post-diphtheritic paralysis is still *sub-judice*. Axenfeld believes that the relative frequency of post-diphtheritic paralysis varies enormously and hence it is difficult to estimate precisely the value of any treatment.

Tetanus serum finds its therapeutic field in the rare cases of tetanus following injury to the eye or its surroundings, although if tetanus has already set in the success of serum-therapy is dubious. The prophylactic action of tetanus antitoxin is unquestioned, and it should be the rule to use the serum in eye injuries which are contaminated with earth, manure, street mud, and especially those wounds caused by splinters of wood contaminated by mud, or by the lashes of whips. Following Kocher's dictum, it is proper to inject the antitoxin in all suspicious injuries.

In hay fever conjunctivitis, Dunbar's Pollantin may be applied in powder or drops to the conjunctiva and the nasal mucous membrane. An "anti-kenotoxin" prepared by Weichart and known as "Graminol," is also useful. Axenfeld believes that both preparations are good in some cases, but not in all, and when they do act the result is often not lasting.

To autotoxic serum-therapeutics belongs also the application of Roemer's Jequiritol serum. Should the reaction following the stronger Jequiritol be too great, the instillation of the antiabrin serum will reduce the threatening symptoms. The efficacy of the serum after the reaction sets in is to be explained on the ground that the toxalbumose becomes only gradually bound and that the serum can reattract to itself even the anchored toxin. Axenfeld suggests that more might be achieved in the avoidance of corneal complications by the subcutaneous use of the serum, and that prophylactic injection of serum into the tear sac might effectively prevent that other dreaded complication—dacriocystitis.

Much greater theoretical and practical difficulties are offered by bactericidal serum therapy, which is directed against those bacteria which do not produce free toxin capable of being bound by an antitoxin serum in a simple chemical way.

The pneumococcus serum of Roemer and Merck does not fulfill the therapeutic requirements necessary for the treatment of *ulcus serpens*. It does possess curative properties and may be used exclusively in benign cases in which conservative methods are justifiable; in severe cases it may be used as an adjuvant to surgical treatment. Roemer has recently suggested a serum prepared by the use of pneumococci of high virulence for animals. Active immunization by the subcutaneous injection of dead cultures of pneumococci has not proved sufficiently efficacious. Better results might be obtained if we could use a vaccine prepared from the pneumococcus taken from the *ulcus serpens*. But before such a vaccine would be ready, the destruction of the cornea might have increased dangerously.

In streptococcal diphtheria of the conjunctiva, hematogenous inflammations of the eyeball of a metastatic character, and possibly in cases of acute rheumatic iritis, streptococcal serum or vaccine is to be considered as an adjuvant to other methods.

Of staphylococcus serum therapy and its influence on the eye we know very little up to the present.

If prophylactic serum-therapy is indicated in operations on the eyeball, it will best be carried out by active immunization with vaccine

from microorganisms which have been cultivated from the eye of the patient himself. In cases in which it is impossible to prepare vaccines from the patient himself, a standard vaccine or immunization-serum, as obtained from serum institutes, is to be used.

The subconjunctival injection of vaccines is irrational. Before it can produce any healing effect a vaccine must first reach the organs which produce the antibodies (spleen, marrow, etc.) whilst on the other hand, in the subconjunctival tissue no considerable production of antibodies can take place.

In the treatment of acute purulent wound inflammations we have less to expect from vaccine immunization, because the formation of antibodies occupies too much time. However, the subcutaneous injection of small doses of dead culture of staphylococci often produces a rise in the opsonic index even by the next day. But in this type of inflammation the passive immunization with an efficient "immunization serum" is the best. In some cases where it is impossible to determine the precise character of the infecting organism (as in intraocular infections) it may be advisable to use a combination of two or more serum therapies.

It is questionable whether a gonococcal vaccine is at all efficacious in acute gonorrhœal conjunctivitis, but it does appear to have a certain value in metastatic gonorrhœal eye diseases.

Roemer's proposal to inject hemolytic serum into the body for the purpose of producing solution and more rapid reabsorption of hemorrhages of the vitreous, has not led to any definite results, and is, moreover, not devoid of danger to the integrity of the eye.

With regard to the use of tuberculin, and its dosage, Axenfeld is inclined to follow the technique of v. Hippel, in opposition to the dicta of Wright. The latter has pointed out that the opsonic index may be brought to and maintained at the highest possible degree by much smaller doses than those recommended by v. Hippel. It must be determined whether the opsonic index can be accepted as the sole measure of this treatment and of its results. The opsonic result is only one of the effects of immunity and not the sole one. It will be necessary to treat cases of eye tuberculosis with varying doses under continuous observation of the opsonic index and the clinical course.

Of infections which are exclusively pathogenic for the eye, sympathetic ophthalmia is first considered. The prevailing opinion that this disease is a metastatic infection conveyed by the blood circulation, has led zur Nedden to inject the blood serum of patients suffering from sympathetic ophthalmia into other patients showing the beginnings of the disease.

In some cases a considerable improvement was manifested. The prospects of this serum-therapy seems *a priori* to be not very good. As the eyes only react to the germs of sympathetic ophthalmia, it is not probable that these germs have any considerable influence on organs which produce antibodies. For the same reason a vaccine therapy seems to promise very little.

Except for scientific interest, it is not worth while to make trials of vaccine therapy in diplobacillary infection because we already possess an excellent remedy in the local application of salts of zinc.

Non-specific serum-therapy. The partisans of non-specific serum-therapy do not deny the specific nature of antitoxin and of the other specific antibodies, but believe that the serum which has been prepared by a certain toxin or a certain bacterium, or with yeast, contains, in addition, still other active qualities. According to Darier, who, with

Deutschmann, is the especial champion of non-specific serum-therapy, the injection of such strong toxins as the diphtheretic or tetanus toxin excites all organs to the production of antibodies of all kinds, and this makes the serum effective in all kinds of infections. Axenfeld criticizes Darier's work on the ground that absolutely no experiments on animals' eyes have been carried out to test and control his observations made on man. To supply this hiatus, Drs. Happe and v. Szily, in Axenfeld's laboratory, carried out a series of experiments. Rabbits, previously immunized and also treated daily with relatively large doses of Behring's or Roux's serum, received accurately measured minute quantities of dilute vibration culture of staphylococci or pneumococci, injected with a fine canula into the vitreous, anterior chamber or the cornea. A control rabbit was always infected in exactly the same manner. The experiments were entirely negative, as the animals treated showed the same symptoms as the untreated. For instance, treated animals injected in the vitreous with pneumococci, not only developed panophthalmitis, but even died in a few days, exactly as did the control animals. In other words the serum did not exhibit any influence against either local or general infection.

With Deutschmann's serum, which is prepared from horses that have been fed on yeast, the workers in Axenfeld's laboratory have obtained negative results. The results obtained indicated that neither infections of the vitreous, nor those of the anterior chamber, nor of the cornea, showed any appreciable effect as the result of the yeast treatment on either the severity or the course of the disease. These results are diametrically opposed to Deutschmann's claims of favorable results after use of the yeast and serum in rabbits, into whose anterior chambers had been injected staphylococci, streptococci, pneumococci or tubercle bacilli.

Axenfeld concludes as follows: "So far as it is possible we shall still have in the future to determine the species of germs in all infectious cases in which serum treatment is to be used, in order to use that kind of serum or vaccine which corresponds best to the special etiology. That must be demanded also for this reason, that only in this way can we supplement our knowledge of the important question, as to how far the different kinds of bacteria are influenced by different methods of serum therapy. Even if the non-specific serum-therapy should fulfill all the promises made in its name, nevertheless the determination of the germ, so far as possible, would remain indispensable."

TRANSACTIONS OF THE GERMAN ORTHOPEDIC CONGRESS.

BERLIN, APRIL 12TH AND 13TH, 1909.

Reported by M. Froelich, *Revue D'Orthopédie*, July, 1909.

By NATHANIEL ALLISON, M. D.

The Eighth Congress of the German Orthopedic Society was held in Berlin on the 12th and 13th of April, 1909. Professor Lange, of Munich, moved that the order of the day be the discussion of Congenital Hip Dislocations, and there were eleven papers by different authors read on this subject. Four of these papers were illustrated by radiographs, which were presented in the evening at the "Langenbeck Haus."

Drehman (Breslau) made a study of the relationship between the neck of the femur and the diaphysis of the same in the condition which one designates antiversion of the femoral head. This antiversion is not due, as one might think, to a vicious insertion of the neck on the diaphysis, but is due to a torsion of the diaphysis itself at the level of its superior third. This antiversion, which is called antitortion, is usually not very marked and has little practical importance unless it is very marked where it might oppose the retention of the femoral head, after reduction, and occasion a relaxation forward and above.

Reiner (Vienna) has recommended for these cases an osteotomy, or, better still, a preliminary osteoclasia of the femur at its inferior third. After this division of the bone, the lower part of the limb is placed in external rotation, in such a manner that the plane of the condyles is in the same plane with that of the femoral neck and head. After this fracture has united, then a reduction of the dislocation should be made by the Lorenz method. Most of the speakers thought that this preliminary intervention was very rarely indicated, and that most often the antitortion would correct itself spontaneously. Lorenz alone affirmed that where the antitortion was pronounced (90 degrees) the osteoclasia recommended by Reiner was the thing to do.

Spitzzy (Graz) has examined children not yet operated upon for the existence of coxa vera, and confirmed the observation of Froelich that congenital luxation in young infants is rarely accompanied by coxa vera. It appears more frequently in older cases. The cause of this lesion is a congenital weakness of the head and neck, exaggerated by the pull of muscles and by the functional overburdening.

Froelich (Nancy) has studied coxa vera which follows reduction of congenital dislocations. It shows itself in the statistics as follows: 12 cases in 120 (Horwarth), 4 cases in 150 (Joachimsthal), 6 cases in 380 (Froelich), 2 cases in 500 (Redard). Of these there are many causes; one is the separation of the epiphysis at the reduction, another is a separation or a fracture of the neck during the manipulations and mobilization in the after-treatment. The most frequent cause, perhaps, is a gradual development of the condition, due to the functional overburdening when the child commences to walk. Perhaps there is a rare-

taction of the bone, as in rickets. The symptoms of coxa vera are sometimes not noticed, sometimes pain in walking accompanied by a limp. If this limp persists it may not always be due to a coxa vera, but may be caused by the reabsorption of the cavity and by a true laxity of the articulation.

Stieda (Koenigsburg) demonstrated the fact that the existence of a true coxa valga in dislocated hips is not at all certain in spite of the theory of Drehmann, to the effect that the abnormal position of the neck tends to produce this condition. He believes it to be infrequent.

Rosenfeld (Nürnberg) suggested a uniform conformity of terms in describing position of the head and neck, and advised the use of the equatorial and meridian planes. When the subject is lying on the back, the lower extremities make an angle of 180 degrees. When the subject is standing up with the limbs flexed the angle is 90 degrees. As the limb approaches the axillary region, the angle diminishes from 90 to 0. These same angles can be measured in a horizontal or equatorial plane. In order to establish internal rotation, it is necessary to imagine a triangular plane which passes through the two condyles of the femur and has its summit at the hip articulation. Internal and external rotation are shown by the degree of angulation which this plane makes with the horizontal or equatorial planes. If one imagine a terrestrial globe with its centre at the hip articulation, the idea of the author is easily comprehended.

Koehler (Wiesbaden) exhibited a series of radiographs which illustrated the normal cotyloid cavity and confirms the assertions of Reiner and Werendorf in their communication on the same subject last year.

Lorenz (Vienna) went through the technic of reduction of congenital dislocation of the hip. It is often necessary to combine traction below the knee, with pressure under the great trochanter, in order to place the head in the cavity. The first plaster dressing confines the limb in 90 degrees flexion, the second dressing places the limb in internal rotation with the knee flexed at a right angle, which is the only way to secure internal rotation. If there is a great antitortion of the femur it is necessary to place the limb in axillary flexion. If the limb can not be placed in the second position, Lorenz puts the child in an apparatus in which it lies with the two limbs in flexion and abduction, where they are confined by straps, and little by little the abduction and extension increased. This is done for several hours every day.

Joachimsthal (Berlin) thinks that the retention of the head is often favored by osseous proliferations, which appear very quickly after reduction around the border of the acetabulum. He exhibited two anatomic preparations; one of an infant who died after four months, and one who died after six months, following reduction to confirm this point of view.

Lange (Munich) does not believe that this proliferation of bone is useful in retaining the head until after a year has passed. He believes that the ligaments and the capsule are the principal structures which aid in the retention of the head, and that, therefore, the limb should be placed in a position to make use of these structures, namely, in internal rotation.

Gocht (Halle) also believes that the head should be retained by the retraction of the joint capsule and that the posterior portion of the capsule should be encouraged to contract by keeping the limb in the first position; that is, the position of abduction and flexion of 90 degrees.

Ludloff (Breslau) stated that he wished to obtain the results of treatment of congenital hip dislocation in order to establish a scientific

statistical report of all the cases operated upon before 1907. He wished to have the presence of Trendelenburg sign noted, and also the age at which operation was done, as well as a copy of the radiographs of the case.

Bade (Hanover) has studied the cases of sciatic paralysis and crural paralysis that have followed operative reductions, and found that the percentage was 2.1, principally produced by the abduction movement, whereby the head of the femur presses or injures the sciatic nerve. A less frequent cause is extension. These paralyses usually disappear after some weeks or months. The method to pursue when paralysis is established after an operation is, after the reduction has been obtained, to keep the child in plaster, being careful that there is no compression or traction on the nerves. If the reduction has not been obtained the plaster should be removed and all pressure or traction on the nerve should be carefully avoided.

Becher (Münster) made a report of the treatment of congenital dislocation by the bloodless method on older patients, and stated that complete cures were exceptional. Always in their results there is a certain amount of stiffness. Reiner has made a study of the open operation results in the old cases of Lorenz. He found 40 per cent. good results. He believes that it is well to make an open operation when the reduction is not possible by the method of Lorenz. He does not believe that there should be an exact age limit set, and that one should proceed after the method recommended by Ludloff, which is to proceed as in the bloodless method, placing the limb in abduction and flexion. Then, after several days, when the hip no longer shows signs of inflammatory process, the joint should be opened and the head of the femur firmly placed in the acetabular cavity. This method will overcome many difficulties which have been heretofore encountered in treating cases beyond the age limit.

Deutschlander (Hamburg) showed three cases operated upon by the open method; one by the procedure of Hoffa, one by the procedure of Ludloff, and the third by a modification of Ludloff's procedure. The results were very satisfactory. The cases had been under treatment for four years.

CORRESPONDENCE.

PARIS LETTER.

By AUGUSTE A. HOUSQUAINS, M. D.

CANTHARIDES IN THE TREATMENT OF EPITHELIAL NEPHRITIS.

Recurring to the idea he had developed some fifteen years ago, Professor Lancereaux, of the Academy of Medicine, has published the good results that he has obtained in the treatment of rebellious epithelial nephritis by the administration of the tincture of cantharides. This medication, it must be admitted, is paradoxical, since it cannot be denied that cantharides, when administered internally, is often the exciting cause of nephritis itself. M. Lancereaux replies to his detractors with the remark that the fact of a drug producing untoward effects in the kidneys is really a matter of no weight, since it cannot be gainsaid that when a drug does not affect an organ, it remains absolutely inefficacious. In truth, the facts published by M. Lancereaux give rise to the thought that this treatment, followed methodically, merits extensive trial.

All cases of nephritis do not comport themselves in the same manner when tincture of cantharides is employed. In fact, we ought to reserve this medication for those cases in which the disease, being localized in the epithelia of the uriniferous tubules, complete anuria obtains. What is in reality the mechanism of this anuria? We know that the microscope shows us that the tubules are obstructed by the altered and tumefied epithelia. Therefore, it is rational to combat an anuria, thus produced, by a drug capable of exercising an action on the epithelia. If cantharides in certain doses has the quality of destroying renal epithelia, why should it not in a smaller dose modify the epithelia? The clinical facts show that whatever may be the theoretical interpretation of the mode of action of cantharides, this medicament possesses, in certain conditions, a remarkably therapeutic action in epithelial nephritis with anuria. Of the cases reported by M. Lancereaux we will cite one of the most typical. A girl, aged eight years, well-developed, came to him July 7, 1908. She was convalescing from scarlatina. She was pale and presented on her legs and abdomen a desquamation; was uncomplaining and apathetic; had a disgust for food and vomited the milk and the broths shortly after ingestion. The axillary temperature was 36.6 C., and none of the other organs was affected but the kidneys. The urine, acid and scanty (150 grams in twenty-four hours), specific gravity 1.025, showed an abundant and flocculent albuminous deposit. The microscope revealed hermatin in large quantities, leucocytes, altered tubular epithelia, hyaline and granular casts. The urine, examined repeatedly before the advent of the scarlatina, was found to be normal; therefore it was but right to say that here was a scarlatinal nephritis.

The patient was put at once on an exclusive milk diet and on diuretics, such as theobromin, lactose and digitalis; but her condition remained unaltered, the quantity of the urine continuing to oscillate between 50 and 250 cubic centimeters in twenty-four hours. Constipation was present, and from time to time there was vomiting. The pallor of the face increased, the lids became edematous, and there were slight edema of the lower limbs, nervousness and insomnia. On July 31, the urine was red in color, had a specific gravity of 1,034, contained five grams of albumin to each 200 cubic centimeters, and presented an abundant deposit formed of red and white corpuscles and epithelial casts. The persistence of these phenomena, and above all, of anuria; the menace of a uremic crisis at any moment that would carry off the patient, proclaimed a condition that was nothing if not grave. It was then that M. Lancereaux decided upon using the tincture of cantharides. On August 2, he prescribed a potion containing only one drop of the tincture, and the following day the quantity of urine increased to 600 grams. Each day thereafter two drops were given, the quantity of urine increasing to 1,400 grams and finally to 2,000 grams. The use of the drug was stopped after five days.

From the time the quantity of urine increased, the general state improved in a progressive manner, in so far as the anorexia and vomiting ceased, and calm and sleep were restored. At the end of twelve days the patient left her bed and eight days later she was no longer restricted to a special diet. The urine at the same time changed in color, the casts disappeared, the quantity of albumin decreased little by little until no trace could be found. On August 17, she was well enough to quit the hospital. She returned in November to verify her complete recovery. In sum, here was a case of a child afflicted with an epithelial nephritis, whose chances for recovery were slim, restored to health after taking less than ten drops of the tincture of cantharides. This suggestive fact proves not only the efficacy of the tincture of cantharides in the treatment of epithelial nephritis, but shows how small a thing will save a life, since there can be no doubt that this child was in a dangerous condition.

Is it not remarkable that a small dose of the tincture should so rapidly produce an effect that is the best one can expect? M. Lancereaux, who for the first time made use of the tincture of cantharides in an infectious nephritis, proceeded necessarily with the greatest circumspection. He expected, on account of the smallness of the dose, a slight increase in the urine, but the unexpected happened, for his hopes were far surpassed by the results. The case demonstrates the good results following the use of the tincture in the treatment of epithelial nephritis.

The same results were achieved in three young men who were affected with the disease known, clinically, as epithelial nephritis *a frigore*. The youngest, aged nineteen, presented, after a long trip on a bicycle, in consequence of which he was chilled, pains in the kidneys, lumbago, headache, anorexia, vomiting, and a slight febrile disturbance with dyspnea. Shortly after there were anasarca and ascites. The urine filled with a sediment, was of a dark color, specific gravity 1024, amount 400 cubic centimeters in twenty-four hours. It contained 16 grams of albumin, the urea and the chlorides being decreased. The microscope revealed in the sediment numerous granular and hyaline casts and desquamated epithelial cells. The treatment during two months had been a milk diet devoid of chlorides, opotherapeutic medication (hog's kidney), but the

results had been *nil*. When he consulted M. Lancereaux he was decidedly pale, profoundly anemic, and his condition was one of gravity. At first he was put on a strictly lacteal diet. A potion with 5 drops of the tincture of cantharides was administered, and the next day the quantity of urine increased from 400 to 750 grams. The dose of the medicine was then increased to 7, 10 and 12 drops in the twenty-four hours; the quantity of urine steadily increasing and at last attaining 3,000 cubic centimeters. During this time the ascites and edema diminished, the albumin decreased to 4 grams, the specific gravity descended to 1018, and the general condition improved. The two other patients, aged respectively twenty and twenty-one years, who had contracted their nephritis after a prolonged bath in the river, were helped by the tincture, for their anuria disappeared rapidly and their general condition was improved after doses of from 6 to 12 drops in twenty-four hours. And here it would be well to remark that one ought to use only a fresh preparation of the tincture since an old preparation has not the same active qualities.

Thus the facts published by M. Lancereaux,—facts which coincide with those published some time ago,—place in evidence the remarkable efficacy of cantharides in the treatment of diseases of the kidneys when the lesions are in the tubular epithelia. The physician when treating a nephritis should not limit himself to the finding of albumin but should take into consideration the specific gravity, the coloration, the quantity, the presence or absence of hyaline casts, and of epithelial cells. The therapeutic efficacy of a substance, which in large doses provokes the malady that it combats in small doses, is, in short, a characteristic of all drugs. This is not more paradoxical than the curative action, in small doses, of certain alkaloids which, when the dose is increased, become toxic.

July 19.

OBITER DICTA FROM FOREIGN JOURNALS.

GAMBETTA'S EYE.

THE *Mémorial de la Librairie*, in a recent issue, prints the following letter from the private correspondence of Gambetta, in which the great statesman relates in detail, for the enlightenment of his father, how expensive a matter it is to engage the services of a well-known oculist when the removal of an eye is imperative. "Both my eyes," writes Gambetta, "were affected, but the right one was so much the worse that there was danger of its affecting the other. Dr. Fienzal advised me to consult Dr. de Wecker, who insisted that an operation was necessary. Needless to say the diseased eye was removed some days ago, and I am now in possession of an artificial eye which I have already tried and which, so the promise runs, will deceive even the closest scrutinizers. But though the operation was successful, I will be compelled to be absolutely quiet a whole month. Do you realize what this means to me? Under ordinary circumstances the inconveniences might be overcome, but with the price of commodities soaring skywards on account of the Exposition, and absolutely no source of income during my enforced retirement, I cannot but realize that I am facing financial disaster. Again, on account of its being necessary to make a model for the artificial eye, the bill for the eye alone will amount to 900 francs. Were this all, I might be somewhat reconciled to my expenses, but there is another item to consider, and not an inconsiderable one,—namely, a gift for Dr. de Wecker, who has refused to accept money." Considering that the artificial eye was worth 900 francs, a tidy sum even in these plutocratic days when money is thrown with a lavish hand on things that are less needful than an eye, it ought not to surprise us at all to learn that the diseased eye became an object of veneration and was coveted by a number of connoisseurs. That it was finally acquired by an irrepressible American millionaire and carried triumphantly to America, should be a source of gratification to all those good folk among us, who are avid of seeing in their own country many, if not all, of the curiosities with which Europe is so plentifully strewn. The dramatic words of the *Echo de Paris* best express the final destination of the great Tribune's eye: "A pupil of the oculist de Wecker, who was assistant at the time of the operation, was presented with the eye by Gambetta himself, who was then a lawyer of some repute with small regard for its future value on account its once having belonged to him. The canny student must have been blessed with considerable prescience for he bottled it carefully and guarded it with rare solicitude. Years passed and the obscure lawyer became the illustrious statesman, the student in the meantime garnering laurels as an oculist. As the latter's fame increased he added thereto, considerably, by showing the impressionable of his wealthy clientèle, his unique possession; and ere long his patience and care were amply rewarded, for an American millionaire, with an insatiable thirst for curiosities, materialized and bought the relic. To-day Gambetta's eye, in its original bottle, is safely stored away in America."

A RECENT CHAPTER IN ARCHÆOLOGY.

THAT vases may be the means of ascertaining historical data in regard to diseases; was illustrated at a recent meeting of the French Academy of Medicine, when M. Capitan presented four Peruvian vases belonging to his collection, which are undoubtedly of a period anterior to the 11th century, and therefore date back to a time preceding the Incas dynasty of reigning lords from the 13th to the 16th century. The vases were found in sepultures by Dr. Berthon, and if the figures on them are as illuminating as M. Capitan makes them out to be, they are not without interest as a lesson to those modern medical men, who are prone to overlook the fact that the recognition of diseases was possible even at an early period in history. Savants who have examined these vases are of divers opinions, some contending that the figures undoubtedly show syphilitic and tuberculous lesions, others that the marks of leprosy are evidenced, while others still are convinced that the partial amputations depicted are nothing less than a surgical interference to prevent the further propagation of diseases, and a gentle method of chiding delinquents for being a menace to their fellowmen! According to M. Capitan, the loss of both eyes in one of the heads is indicative of an infectuous panophthalmitis, a diagnosis that would seem to carry with it a deeper knowledge of the signs of disease, as deciphered by archæologists from figures on ancient pottery, than is apparent in their usual expositions which every now and then flash across our darkened horizons.

BOOK REVIEWS.

TUBERCULOSIS: A PREVENTABLE AND CURABLE DISEASE. By Adolphus S. Knopf, M. D. New York: Moffat, Yard & Co., 1909.

This small volume is presented to the medical and lay public with a view of placing before each the most important points in the prevention and cure of tuberculosis. It is intended to show that tuberculosis is a preventable and curable disease, rarely hereditary, and that in children of tuberculous parents the pre-disposition can be overcome through proper hygienic and dietetic precautions. The book is serviceable, therefore, to the physician, to the patient actually affected, and to that portion of the public who are interested in the fight against the white plague.

The chapters are devoted to those points that tuberculous patients should know of their disease, to the duties of the people in general, the duties of the physician, the family of the patient, the community in which he lives, etc., to the sanatorium treatment, to the duties of modern municipal health authorities, etc., etc.

The book is adequately illustrated, well indexed, and is in large type.

Dr. Knopf has succeeded admirably in presenting a volume containing what the patient should know and eliminating that which he should not know of his disease.

DIE STAUNGS HYPERAEMIE NACH BIER IN DER OHRENHEILKUNDE, von Prof. Dr. Eschweiler in Bonn. Verlag von F. C. W. Vogel in Leipzig.

This little monograph of seventy-five pages is a review of the literature and a detail of the author's experience in the treatment of diseases of the ear by Bier's method. The book impresses one as being the work not of a hyper-enthusiast but of a careful thinker and close observer. As such it commands our respect and attention. To quote from the author, page three, "In the light of practical experience, all remonstrances based on theoretical grounds, the reagent glass or animal experiments, must keep silent. The healing effect of hyperæmia can not longer be questioned and will scarcely any longer be questioned. The opinions will vary rather in this—some will limit hyperæmia to a small circle of inflammatory diseases, while others will be in favor of stasis-therapy in a large extent of cases. The truth lies in the middle."

The author then gives not only his own but the experiences of others in the treatment of the various inflammatory diseases of the ear—external otitis, catarrhal otitis, otitis media, acute and chronic, and mastoiditis by the Bier method. The details of the treatment are accurately described in a most careful and lucid manner. The book should be of especial value to the specialist and of interest to the practitioner.

INTERNATIONAL MEDICAL ANNUAL. 1909. A Year-book of Treatment. Practitioner's Index. 8vo. 683 pages. Price \$3.50. E. B. Treat & Co., 24 West 23rd Street, Chicago.

This annual is a review of medical literature of the year, arranged in a very easy reference form and illustrated by plain, colored and stereóptic plates. It consists of three parts: Part I, A Dictionary of *Materia Medica* and Therapeutics; Part II, A Dictionary of *Medicine and Surgery*; Part III, *Miscellaneous Subjects*, as Sanitation, etc. It has been prepared by a staff of thirty-five editors, each one of whom is an authority in the division of medicine reviewed by him. The subject matter considered is only the most important communications deserving attention through their intrinsic value. The reviews are compact and exact, yet full enough to be of use without referring to the original article, which, however, is credited and given as reference. This annual has the great advantage over the ordinary year-book in that it covers the most valuable productions of the year without being too extensive for practical use. It is the most complete one-book review of the entire field of the medical literature of the past year, available.

ELEMENTARY PRACTICAL TREATISE ON DISEASES OF THE PHARYNX AND LARYNX. By Dr. E. J. Moure, Surgeon in charge of the Nose, Ear and Throat Department of the Faculty of Medicine, Bordeaux. Translated and adapted by J. Malcolm Farquharson, M. B., F. R. C. P., Edinburgh. Lecturer on Diseases of the Nose, Ear and Throat in the School of Medicine of the Royal Colleges, Edinburgh, etc. New York: Rebman Company. Price \$4.00.

The name and reputation of the author are quite sufficient guarantee as to the character of the book. We are indeed fortunate in having so excellent a book translated into English. To us the most striking feature of the book, as stated by the author in his preface, is its completeness. This should be of especial value to the practitioner, who may at times be confronted with some of the rarer conditions of the pharynx and larynx.

The style is simple, clear and forceful; the sentences short and terse, leaving no doubt as to the meaning to be conveyed. For this the translator also deserves credit.

We would call especial attention to the chapter on tonsillar and peritonsillar abscess as being most excellent, although differing somewhat in the method of treatment from the usual presentation.

In the last part of the book dealing with the larynx, the differential diagnosis between laryngeal tuberculosis and syphilis is most clearly given, while the conclusion reached in treatment states the author's most logical position. "It would be better to modify the receptivity of the soil than to pay too much attention to the local lesion, and thus sacrifice the patient in order to kill the bacillus." Not worthy of less mention are the excellent chapters on the neuromuscular affections of the larynx.

Few, I think in this country, would be inclined to agree with Dr. Moure in his treatment of hypertrophied tonsils. American surgeons seem to be fairly well agreed upon the advisability of tonsil enucleation.

GENITO-URINARY DISEASES AND SYPHILIS. By Edgar G. Ballenger, M. D., Atlanta, Ga. With 86 illustrations. Cloth; pp. 276. E. W. Allen & Co., Atlanta, Ga. 1908. Price, \$3.50.

This little book, originally intended for medical students, will be welcomed by the active general practitioner. It covers the subject thoroughly without dwelling too much on theories; occupying a position, therefore, between the large text-books and the condemnable manuals and quiz-compounds, from which students and oftentimes physicians acquire their medical knowledge. The work done in the study of syphilis during the last few years is given the place it deserves, and also in other respects it can be said to be entirely up-to-date. The fact that the author gives his own views and methods of treatment increases the value of the book.

LEITFADEN DES RÖNTGEN-VERFAHRENS, unter Mitarbeit von Dr. A. Blencke, Magdeburg; Professor Dr. Hildebrand, Marburg; Geh. Medizinalrat Prof. Dr. A. Hoffa, Bertin; Professor Dr. A. Hoffman, Düsseldorf; Docent Dr. Guido Holzkecht, Wien; Herausgegeben von Ingenieur Friedrich Dessauer, Aschaffenburg und Dr. med. B. Wiesner, Aschaffenburg. Mit 113 Abbildungen und 3 Tafeln. Dritte umgearbeitete und vermehrte Auflage. Preis 10 Mk. Verlag: Otto Nemnich, Leipzig. 1908.

This work is a production of the combined efforts of an electrical engineer and a physician, both connected with the famous Röntgen Institute in Aschaffenburg, where regular six-week courses are given in the technical, diagnostic and therapeutic use of the Röntgen ray. The reader is given the benefit of the results of the daily work of the authors, for which reason the book is highly recommendable; it is, however, more highly to be recommended because of the masterly way in which such men as Hoffa, Holzkecht, etc., treat of the special subjects. Not only the beginner, but the accomplished roentgenologist, will find a treasure of information in the book.

DIE UNTERSUCHUNGSMETHODEN UND ERKRANKUNGEN DER MÄNNLICHEN UND WEIBLICHEN HARNORGANE. In 17 Vorlesungen. Von Professor L. Burkhardt und Privat-Dozent O. Polano, Universität in Würzburg. Verlag von J. F. Bergmann in Wiesbaden. 1908.

Urology is one of the youngest specialties of medicine. Much has been added of late to our knowledge of the diseases of the urinary tract, and this probably is due more to the general use of the cystoscope than to any other single factor. Any book presenting clearly the theoretical and practical side of cystoscopy and

the most advanced teachings concerning the diagnosis and therapy of diseases of the bladder will be heartily welcomed not only by the specialist but also by the physician doing general work. This splendid volume also contains chapters, in form of clinical lectures, on the relation of urology to general diseases, to obstetrics and gynecology, on urologic diseases and their treatment in children. Numerous cystoscopic pictures of the more common conditions are presented in most beautiful illustrations in natural colors.

SURGERY: ITS PRINCIPLES AND PRACTICE. In five volumes. By 66 eminent surgeons. Edited by W. W. Keen, M. D., LL.D., Hon. F. R. C. S., Eng. and Edin., Emeritus Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Phila. Volume IV. Octavo of 1194 pages, with 560 text-illustrations and 22 colored plates. Philadelphia and London: W. B. Saunders Company. 1908. Per volume: Cloth, \$7.00 net; half morocco, \$8.00 net.

This fourth volume is in every way up to the excellence of the previous ones. The men selected to deal with the various subjects are familiarly associated with the branches assigned. It is only necessary to mention that Coley deals with hernia, Cabot with stone in the bladder, Young with the prostate, Murphy with the appendix, to instantly appreciate that these men have given us the best thought on these subjects. Some other chapters are on the rectum and anus by Abbe, kidney, ureter and suprarenal by Ransohoff, bladder by Lewis, scrotum and testicle by Bevan, intestine by Van Hook, ear by Dench, eye by De Schweinitz. The chapters on military and naval surgery are handled by the Surgeons General to the U. S. Departments. Tropical surgery is discussed by Walter McCaw, and there is an interesting chapter on the "Influence of Race, Sex and Age in Surgical Affections" by Rodman. This system of surgery, which still wants one volume to be complete, is one of the best ever published, and in its contributions is recorded the work of the foremost surgeons of the world, making it a universal Surgery in English, though we are gratified to find so much of the best is American.

RIVERSIDE EDUCATION MONOGRAPHS. Edited by Henry Suzzallo, Professor of the Philosophy of Education, Teachers' College, Columbia University. Published by Houghton Mifflin Company, Boston. Price 35 cents each, net, postpaid.

Of this series of monographs, two have been published, viz.: Education, by Emerson, and The Meaning of Infancy, by John Fiske. Ten other volumes are in preparation. The entire series will include six monographs on general educational theory, two volumes on administration and supervision of schools and four volumes on methods of teaching.

The readers of the INTERSTATE are familiar with Emerson's essay on Education, and special mention of it is unnecessary. The other volume before us is not so well known. It consists of an essay, "The Meaning of Infancy," in which is presented a brief and simplified restatement of those theories of man's origin and destiny; this is followed by an address, delivered by Fiske in 1895, on "The Part Played by Infancy in the Evolution of Man." Together the two papers present an interesting biological interpretation of childhood and education which will prove of value to physicians of broad professional interests.

DIE ANWENDUNG DER ELECTRIZITÄT IN DER DERMATOLOGIE. Ein Leitfaden für praktische Aerzte und Studierende, von Prof. Dr. S. Ehrmann, in Wien. Met 98 Figuren im Texte. Preis: Mark 6. Wien und Leipzig, Verlag von Josef Safai. 1908.

The various forms of electricity are used to a greater extent in dermatology than in any other specialty. Electrolysis, faradization, galvanization, x-ray treatment, the high frequency current, static electricity and the different forms of electric light, all have their value in the treatment of various diseases of the skin, but these methods are only touched upon in medical schools, as too much time is required for didactic lectures on special pathology. Dr. Ehrmann's book, therefore, will be welcomed by the general practitioner, who is often called upon to treat diseases of the skin.

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EDITORIAL.

THERAPEUTICS IN THE SEVENTEENTH CENTURY.

Those among us who are dissatisfied with the therapeutics of to-day, should not fail to read Dr. Raymond Crawford's volume on "The Last Days of Charles II.,"* for though we are wont to visit drastic criticism upon what is done at present in the way of the administration of drugs, our attack of ill-temper will be short-lived when comparisons are made with what was deemed necessary in the treatment of disease in the seventeenth century. That the art of correct diagnosis at this time was still an undeveloped part of medical science should make for no surprise, since even at a later day immaturity stamped this most important matter with many demerit marks declarative of ignorance; but what should fill us with surprise is the lengths to which human ingenuity of the medical sort went, when the question arose just what drugs to prescribe to alleviate suffering. Whether or not Charles II.'s death was due to apoplexy or poisoning or chronic granular kidney with uremic convulsions, as vouched for by Dr. Crawford, has small concern for us at the present day, since it is a purely controversial matter with but few gleams of ultimate solution; nevertheless, in remembering that the King's various doctors were at sea as regards the nature of the disease, a touch of modernity is given the case by virtue of the fact that floundering at so momentous a time is always attended by the invocation of altogether too many drugs, in the hope that their successive application will demonstrate that there really must be one drug in the vast arsenal of therapeutics which can demonstrate the correctness of clever guessing.

It requires no intolerable stretch of the medical imagination to put the clock back some two hundred years and act as witness to the scene which started with the use of the lancet on "a vein in the right arm" from which "sixteen ounces of blood were removed" by Sir Edmund King, who "blooded the King." This gentle expression of the art of

*New York: Oxford University Press.

medicine was followed at short intervals by "cupping glasses * * * applied to his shoulders forthwith, and deep scarification * * * by which they succeeded in removing another eight ounces of blood. A strong antimonial emetic was administered, but as the King could be got to swallow only a small portion of it, they determined to render assurance doubly sure by a full dose of Sulphate of Zinc. Strong purgatives were given, and supplemented by a succession of clysters. The hair was shorn close and pungent blistering agents applied all over his head; and as though this were not enough, the red-hot cauterium was requisitioned as well. So severe were the convulsions that the physicians at first despaired of his life, but in some two hours consciousness was completely restored."

Here it would be advisable for the interested reader to take breath, for though the convulsions stopped and the royal patient was "in a pretty good state," which Chesterfield in a letter to Ormond "ascribes to the joint agency of the medical remedies and the blessing of God, so that the physicians were able to pronounce him out of danger for the present," there was to be only a short-lived surcease of suffering both from within and without, for when the King's physicians reassembled at the bedside "in the evening of Monday," the consultation was held "with a view to relieving the pressure of 'the humors' on his brain by administering remedies to promote sneezing, along with additional aperients. Noxious plasters were applied to the soles of his feet. A preparation of cowslip flowers and spirit of Sal Ammoniac was designed to stimulate and to strengthen the brain by the combined action of the remedies. Soothing draughts were prescribed to allay thirst and to stave off the scalding of the urine, which they were aware must inevitably result from the freedom with which they had made use of the blistering properties of Cantharides. Nourishment was ordered in the form of light broth and of ale made without hops; and with this, therapeutic creativeness rested from its labours on the first day." But Sir Charles Scarborough, who was first physician to King Charles II. and who is responsible for this detailed account, surely put too high a value on "therapeutic creativeness," since Tuesday, and all the succeeding days until "shortly before noon on Friday the sixth of February [when] he expired calmly without any return of convulsions" were in fact many anxious hours that demanded greater and greater "therapeutic creativeness," an insatiability that was fortunately met with the remedial treasures in the armamentarium of drugs at the beck and call of the King's physicians. An organism that was able partially to hold its own against the inroads effected by the administration of Raleigh's Antidote, consisting of a multitude of ingredients, powdered Goa stone, Peruvian

Bark in greater quantity, Sal Ammoniac with greater frequency, the Oriental Bezoar stone which "was transferred from its normal habitat in the stomach of an eastern goat to its last resting-place in that of the King," and julep of Black Cherry Water "at the same time [that] his jugular veins were mulcted in a further ten ounces of blood," is entitled to the greatest consideration; for though our democratic ideals may be in complete opposition to those entertained by all royalists for kingly worth and kingly grandeur, we must admit that here was one, who though frail as morals go, had a physique that would have called forth adulatory praise from any modern physical educator of socialistic proclivities.

Dr. Crawford contends with heat that Sir Charles Scarborough with his idea of "convulsions" and Dr. James Welwood, with his conflicting ideas of either "apoplexy" or "poison," were really very poor diagnosticians, and that "Charles II. [who] was licentious in his practice * * * but knew his people, and rewarded merit," as the Johnsonian phrase runs, was the victim of "chronic granular kidney (a form of Bright's disease) with uremic convulsions, a disease that claims the highest proportion of its victims during the fifth and sixth decades of life." Although we do not wish to impugn the author's historical thoroughness in arriving at his scientific conclusion, we cannot help being more fascinated and more enthralled by a lay diagnosis and prognosis which certainly fits in more closely with the spirit of the times as made clear to us after reading a number of Memoirs. On the Sunday evening preceding the fatal Monday, the pure-hearted Evelyn wrote as follows: "I can never forget the inexpressible luxury and profaneness, gaming and all manner of dissoluteness, and as it were total forgetfulness of God (it being Sunday evening) which this day se'nnight I was witness of, the King sitting and toying with his concubines, Portsmouth, Cleveland, and Mazarin, etc., a French boy singing love songs, in that glorious gallery, whilst about 20 of the great courtiers and other dissolute persons were at Basset round a large table, a bank of at least 2000 in gold before them, upon which two gentlemen who were with me made reflections with astonishment. Six days after all was in the dust."

Here is summed up all the philosophy of life as conceived by the admonitors of the seventeenth century, and since, at this time, medical science was at a disgracefully low ebb, why cudgel our brains to ascertain the real cause for the demise of a gay and festive Stuart? A "forgetfulness of God" may or may not be followed by a stricken condition, but this we can say in all certainty, that a resort to the belief that Divine wrath has been incurred is quite a help to all physicians of ancient and modern times, when the rudder that is to waft them to the haven of

medical security is lost, and an explanation is demanded why Goa stone or the Oriental Bezoar stone or something just as visionary was prescribed instead of a simpler remedy.

WHAT SHOULD DOCTORS READ?

Vigor of thought, which a kindly public is ever willing to associate with the mental status of the philosopher of the sickroom, is really a more important asset than the rank and file in the medical profession think it to be, when appraising the qualities necessary to success in combating the obstacles, which naturally arise at all bedsides to thwart quickness and force of mind on the part of the medical practitioner. An extensive knowledge of medical literature, never detrimental to a combination of deep thinking and good reasoning, is often to be deprecated on the grounds, that its varied and manifold skeins are capable of yielding to the ratiocinative medical man only a confused picture of what should be as clear-cut as if etched with acid. Hence the concentrative force, without which the desired goal cannot be reached, is lacking, and instead there is so great an interplay of real and fanciful theories, that the negligible coloring given forth by the patient effects what it should never do—namely, a partial subversion of the right theory as tentatively expressed by one's inner consciousness backed by scientific training. And just because evidences of this sort of weakening are only too often the outcome of the workings of a mind steeped in no other lore than that of medicine, the thought should present itself to the critics of to-day, that where excess of knowledge of a subject has this handicap, measures should be taken to encourage the medical entity to wander in other intellectual fields, so that stanchness in mental attitudes may be achieved.

By what means then is that strength to be acquired which shall have for its high purport, clarification of thought and single-mindedness incapable of procrastination? Quite recently, Dr. Eliot has given vent to his pent-up literary feelings in the announcement as to what books he deems of vast importance to the furthering of expansion, on the part of those individuals, whose vocations or avocations have deprived them of enough judgment to make their own selection. A sledge-hammer application to the benumbed sensibilities of a people that is prone to read merely to while away an idle hour with no thought of future gain, has the virtue of inciting the thinking faculties in the right direction; but while the jolt is productive of a limited illumination, we doubt if advice, such as is embodied in this latest five feet of culture, has enough significance for the average man to make it the worthy disturbing

factor its originator intended. To promulgate a course in reading for the better sort of minds, irrespective of what their predilections may be, or what ballast is really needed to bring about the much desired sanity that shall be destructive of crotchets and whimsies, and thus abet the only philosophic thought that counts for much, is taking unto oneself a narrow and egoistic survey of the defective training of numbers of men, and, moreover, can never achieve the happy result of giving to any one individual exactly what he lacks, despite his eagerness to fill up undesirable lacunæ by imitation.

This once understood, we need not hesitate any longer to consider just what doctors should read to enforce the cautiousness and logicity of their brains. While our modesty will not permit us to suggest the reading of this or that book, the situation is not so difficult of solution as would at first appear. To insist upon another reading the book which of all books has been the best nutriment in circumstances peculiar, at the time, to a certain individual, is somewhat in line with Dr. Eliot's ideas, and should by no manner of means be encouraged; but though the objections to this sort of procedure are many and formidable, there is yet to be considered what a scientific profession, such as the medical, should read, to bring its various members in juxtaposition with all the small and large problems which encompass every medical case. Pure medical science undefiled by readings in other fields, yields but small knowledge of the intricacies of human nature; and though it might so happen that occasionally a medical man intuitively understands the salient features of the sickroom, so that by weighing them for or against his theory of what really obtains in a medical sense, he either accepts or discards them, thereby acquiring the stanchness and tenacity of his own opinion, the instances are too rare to arrest attention. Realizing that it is only at rare intervals that this knowledge is ours, without arduous delving into what might be called the philosophy of life, the idea becomes paramount that to effect a complete strengthening of a mind, inured only to the teachings of medical science, a wider knowledge of the various significances of the manifold phases of modern civilization is necessary.

All of us have repeatedly been told by many educators of light and leading, that the reading of novels is a sheer waste of time. Not only have the men in the advance-guard of education's triumphal march proclaimed against them, but even medical men, who have commanded our attention on account of their rather unusual qualities as exponents of the medical art, have decried the slightest indulgence in this pastime. To live in a fantastic world continually, must mean a weakening of the mental poise; but an occasional excursion, especially into those fictional realms, that have real individuals and not types, is not only refresh-

ing but an intellectual tonic, the importance of whose virtues is not at once grasped. But this plea for the limited reading of novels that have the means of bringing before us excellent counterfeits of the individuals which the general practitioner encounters in the sickroom, is not given so as to convert those who are violently opposed to this intellectual exercise to our lowly way of thinking, but rather as a suggestion that, even out of what superior persons consider unmitigated alloy, some good may be got. And here it would be well to say that no book, be it good or bad, as judged in the fierce light of criticism, has the same effect on various individuals. One man may derive great and lasting benefit from a work that leaves another unmoved, and the simplest sermon may have the necessary vividness to engraft a new line of reasoning that may be a help to the medical man throughout his whole career. An intellectual crisis is all that is necessary, and to say that it can only arise from a deeply philosophical work is a statement that is purely visionary. No profit to any reader has ever come from enforced reading, and only suggestion, graciously applied, can hope for some measure of success. The five feet of culture, as advocated by Dr. Eliot, and the hundred best books, as given to a weary world some decades back by Sir John Lubbock, have the same futility, since their assiduous reading can only produce the artificial intellectuality that does not make for mental clearness or the incisiveness of thought, which carries the medical man, deeply read in other walks besides that of medicine, beyond the ken of those groundlings, whose mental processes are but an exaggerated imitation of what they foolishly conceive to be the scientific phrasing of some medical luminary whose many theories swamped the only prop that counts for aught in the sickroom—force of mind and clarity of thought.

OLIVER WENDELL HOLMES.

There have been greater literary figures and greater doctors among the Americans than the kindly philosopher of the "Breakfast-Table," but none has ever had the same sort of charm, the same fascination for him who prefers gentility in literature to blatancy. There also have been many centenaries this year, hundredth anniversaries in celebration of the birth of distinguished men, but what appeals have they made to all, alongside the celebration of Oliver Wendell Holmes's birthday? A hundred years is quite a span of time to look back to, and though few of us can say in the much criticized manner of very old men "that we well remember when his first poems appeared and his first essays were pub-

lished" there are yet many not past the meridian of life who can assert in all truth, that they do remember when and how, in their intellectual beginnings, their pulses beat faster because of the presence of the literary force which permeated American literature on account of the strong individuality of Oliver Wendell Holmes. Remembrances such as these count for much; they never lose their lustre; they are the tonic we need to-day since strenuousness and seriousness have almost vanquished what is witty and charming.

As attentive readers of the currents which guide medical thought, it behooves us to pay less attention to the literary Holmes than to the other half of his personality—namely, the medical. But though partly inclined to dismiss his more important vocation with a few words, we yet feel that what we are about to say about his medical career—his excellence as a lecturer on anatomy, his epoch-making contribution on "The Contagiousness of Puerperal Fever"—will have all the drawbacks of a twice-told tale, so often have these details been mentioned in medical journals. His lectureship, covering many years of arduous labor, makes for much as an indication of what a man, gifted in other and altogether different lines, is capable of doing, when a duty lies before him that cannot be shirked. Duty it must have been that held him fast to his chair as professor of anatomy,—the high sense of duty that only a brain steeped in Puritanism can produce. And because he met its stern behests in a philosophic mood, when more gracious things of irresistible allurements were beckoning to him, the best laurel that the medical mind can conceive should be his to hold forever!

In looking back on the early years of one, who engaged in the double struggle of making both medicine and literature yield a slight emolument, we should not forget that though both are about the severest task-masters there are, the drudgeries of medicine far exceed those of literature. This statement is founded in fact, and need not be taken as a scathing criticism of a branch of science that requires greater patience, greater fortitude and greater forbearance, than any other life-work; and where the artistic temperament is paramount, as it was in the case of Oliver Wendell Holmes, a ready appreciation should be ours of how its burdens are many times increased. No wonder then that shortly after his return from Europe, he quit the rough and narrow path of general practice, and accepted the Parkman Professorship of Anatomy and Physiology in the Harvard Medical School. No doubt this was done after careful deliberation and many depressions, lest the step might prove fatal to success garnered in this new field of activity; but we, who look at things in the calm light of retrospection, are not loth to admit at once, that no step he could have taken would have been fraught with

greater importance to the temperament of which he gave such delightful illustrations later on. By lecturing on a subject that was not a task, but the one predilection, in a medical sense, which throughout his life engaged a large share of his best thought, he got nearer the phase of humankind that was best liked by him—the instructors in various departments and, above all, the students. The best essays in his “Autocrat of the Breakfast-Table” and “The Professor of the Breakfast-Table” would not have those outstanding qualities of reality and of truth to human nature, had he stubbornly clung to the humdrumness of the general practitioner’s life, as we take it to have been even in Boston in the prosaic year of 1836!

That a many-sided man such as Holmes was—was he not lecturer on anatomy, author of medical essays that have a literary flavor rarely equalled by other writers, poet, essayist and far-famed raconteur?—should have failed as a novelist, ought not to fill us with surprise. Few, if any medical men, have written fictional works that bear comparison with the best, and this can readily be understood when one remembers, that nothing is so fatal to the imagination as continuous serious thought that is constantly shot with questionings relative to many of the problems of the time. We often hear the charge brought against Holmes, that the originality necessary to the writing of an imaginative work was lacking in him; hence he turned to the writing of that which required less of a natural gift, and more of the talent that has strength because it is imitative. Nothing could be further from the truth.

Even though we may trace at times some resemblance in his essays to the best characteristics of Lamb and Thackeray—Lamb’s wit and charm and Thackeray’s not ungentle irony—his attitude to his subjects was undeniably his own; for the reason, that his strong personality was so thoroughly imbued with what is best in Puritanism, that he regarded all things from a corner of life unthought of before. This may or may not be originality, but it is so near that desired goal that it must strike even the biased as being almost akin to it. His coevals—Lowell, Motley, Hawthorne, to mention only a few—were more reflective, in their writings, of tried and honored influences and standards; and while their literary values are just as high as his, and at times even higher, individuality is not the force that is paramount. And since to-day individuality counts for much in the practice of medicine, does it not devolve on us to regard Oliver Wendell Holmes as the protagonist, who really got out of the science of medicine the virile lesson of the great advantages of this force?

LITERARY NOTES.

In a lecture delivered to the Red Cross Society, and published in a recent number of the *Normandie Médicale*, Dr. Raoult recalls the fact that even as far back as ancient times the contagiousness of tuberculosis was recognized. In 1751 Philip V. of Spain passed an ordinance to prevent all dangers from contagion, thus showing that it was in the south of Europe the first steps were taken to abate the spread of the disease. In fact, northern Europe lagged many years behind, and even in the first half of the nineteenth century there still were indications that little, if anything, in this direction had been done. Chateaubriand, writing from Rome to Fontanes, in the early years of the last century, says: "I am in great financial straits. I had hoped to realize six thousand francs on the sale of my carriages. But the law that already obtained with the Goths, is enforced at Rome—namely, tuberculosis is declared a contagious disease, and just because Mme. de Beaumont, who is tuberculous, has driven two or three times in my carriages, nobody is willing to buy them." George Sand, who accompanied Chopin on his travels when he was in search of a climate that would benefit his tuberculous condition, was greatly inconvenienced by the stringent laws of Majorca, and fared even worse at Barcelona, where the molestation was excessive. Her complaint of the conditions encountered runs as follows: "Here I am in France again, after a journey that was about the most unfortunate attempt at traveling I have ever undertaken. After hundreds of inconveniences were heaped on us, we hoped to establish ourselves in Majorca, a country greatly to our liking, but about the most inhospitable that one can imagine. At the end of the first month of our sojourn, Chopin became so desperately ill that the necessity arose to call in one, two and even three doctors: one proved as asinine as the other, for they at once spread the report throughout the island that the new-comer was tuberculous in the last degree. After this, there was consternation on the part of the inhabitants. Tuberculosis is a disease quite uncommon in this climate and is considered contagious beyond a doubt. The owner of the little house we had rented did not hesitate to turn us out of doors, and declared he would bring suit against us, so as to compel us to re-paint the entire house because of the infection. We then installed ourselves in the Valdemosa monastery, but no domestics could be got, as they absolutely refused to wait on any one affected with tuberculosis. The humidity of the monastery was so great that we resolved to leave at any price, though Chopin was in no condition to be moved. We asked only that one wish be gratified—the hire of a carriage to take us to Palma, whence we intended to embark. This was refused us, although all our friends had carriages and wealth in keeping with their station in life. After trying in vain to get what we wanted, necessity compelled us to resort to a brouette (a small two-wheeled carriage) in which we covered seven and a half miles along unbeaten paths. Arriving at Palma, Chopin had an excessive hemorrhage. The next day we embarked on the only steamboat that belonged to the island and which was used to transport hogs to Barcelona; there was no other way of quitting this accursed country. When we were about to leave the tavern in

Barcelona, the proprietor insisted on our paying for the bed in which Chopin had slept, because it was infected and the police would compel him to burn it."

Dr. Gaudichard, in a recent number of the *Répertoire de pharmacie*, comments on the knowledge of the ancients as regards opotherapy and its various ways of utilization. Thus in the early centuries we find that the products derived from the animal kingdom were in the shape of powders. This primitive notion was necessitated on account of the rudimentary state of all tools at this epoch. Preference was controlled by circumstances. In the fifth century, Sextus Placitus Papyriensis advocated the use of the animal vulva, desiccated and pulverized. In the sixteenth century various parts of animals were first roasted, then burnt, after which pulverization was easily effected. At this period thought was also given to the conservation of organic products by sprinkling them with yellow sandalwood, or surrounding them with wormwood. The animal powders were even combined with other remedies. Baudon, in his pharmacopeia, writes as follows: "The electuary of lungs is prepared by mixing sugar with equal parts of the lung of the fox, liquorice juice, maidenhair, fennel- and anise-seeds." And in the seventeenth century, Van Helmont placed desiccated blood above all other preparations. Organic extracts, though not called by this name, were utilized in ancient times. In the beginning of the Christian era (about 65 A. D.) Dioscorides of Anazarba, a Greek physician, who had gained renown by a treatise on materia medica, wrote to this effect: "The liver of the hedgehog, dried in the sun in a pot exposed to the full rays of sunshine, taken with honey, benefits and cures diseases of the kidneys and dropsy." A bouillon prepared after a fox's lung had been desiccated was considered an excellent draught in all cases of difficult breathing. Pliny prescribed hogs' testicles, macerated in milk, in epilepsy. In the centuries which followed, macerated testicles did not lack in popularity. Joseph du Chesne's favorite prescription as an aid to conception was rams' testicles soaked in wine and then dried. Afterwards they were pounded, macerated and boiled over a slow fire in two litres of malmsey, a wine of Napoli di Malvasia. Here is surely an extract that can well hold its own among all extracts!

Syrups containing extracts from animal organs were not ignored by the ancients. The archives devoted to opotherapy abound with enough instances to show that these preparations were held in high esteem in the earliest centuries. Dioscorides, in his "Materia Medica," recommends for a cough the daily use of an electuary composed of the lung and palate of the deer, dried on a dung-hill and then thoroughly beaten up with honey. Pliny is of opinion that the best remedy for hemoptysis is a pâté of snails, a preparation not unknown to our modern pharmacopeia. Incontinence of urine was combated by the administering of macerated bladders mixed with salt or honey, so that absorption might the more readily be effected. In splenic affections, John of Cuba, prescribed beef spleen mixed with honey. And finally, Dusseau hit upon what he thought was a great discovery when he evolved his powerful aphrodisiac, consisting of birds' brains, to which were added the yolks of eggs and honey!

ORIGINAL ARTICLES.

THE TOXÆMIA OF PREGNANCY.

By HERBERT MARION STOWE, M. D., of Chicago. Ill.

Associate in Obstetrics, Northwestern University Medical School; Attending
Obstetrician to Cook County and Provident Hospitals; Assistant
Obstetrician to Wesley and Chicago Lying-in Hospitals.

It is a well-known fact that pregnancy entails upon every woman a certain degree of toxæmia. The changes produced in the maternal organism incident to the development of a new being are intimately associated with a disturbance of the normal functions of the organs of metabolism and elimination. Not only do the needs of the maternal system require attention during gestation, but it is necessary to provide for the nourishment of the fetus and the disposition of its excreta. This double duty imposed upon unaccustomed and oftentimes diseased organs constitutes the physical basis of the toxæmia of pregnancy.

The etiology of obstetric toxæmia is obscure. When occurring during the early months of pregnancy, investigations have been directed to perversions of the alimentary tract and its associated glands, the kidneys and the thyroid and parathyroid bodies; during the terminal months, the fetus and its envelopes have been studied by observers as a possible source of the toxins but, as yet, no reliable findings have been adduced. Undoubtedly, perverted metabolism plays an important role in toxæmia, but the incompleteness of our present knowledge of the various processes involved makes a problem of the most complex nature.

The most acceptable theory offered in recent years is that of Folin. According to this author, physical energy is derived from oxidation of the carbohydrates and the nitrogenous portion of the proteid molecules. The major portion of the proteid is split up into a non-nitrogenous element which supplies energy to the system and a nitrogenous moiety which is finally converted into urea. This latter portion is not built up into the tissues of the body, but passes out through the excreta. The amount of urea and total nitrogen which appear in the urine are, therefore, entirely dependant upon the diet. The non-nitrogenous element is used to repair the waste occurring in the vital organs and its end product is kreatinin. This material is practically constant in the urine and is independant of the diet. The proteid molecule undergoes digestive action in the alimentary canal as far as albumose. Albumose is then hydrolized into

amino acids when the ammonia groups are split off and pass into the portal blood to the liver to be changed into urea. Practically all the nitrogen passes into the liver as ammonia salts. It is stated on good authority that this transformation occurs solely in the liver. From experiments on the lower animals, in whom Eck's fistula has been established, it has been determined that the alimentary canal is the most fruitful source of ammonia and that its formation depends upon the proteid diet, but is unaffected when the diet is proteid free. If, for any reason, the liver cells fail to synthesize the ammonia into urea, the urea content of the urine is reduced, while the nitrogen excreted as ammonia is markedly increased. On the other hand, if the ammonia is combined in the alimentary canal with free organic acids as a base, the quantity of urea is lessened from a lack of ammonia. The condition of acid intoxication may influence the process to a certain extent and some cases of toxæmia may be benefited by the administration of sodium bicarbonate which takes the place of ammonia as a base and allows the ammonia to pass over to the liver. In a large number of cases, however, no beneficial results are obtained. The two arguments against this theory are first, that the symptoms remain stationary while the evidence of acid intoxication is removed and, secondly, clinical evidence may be present for a long time without producing symptoms of toxæmia.

Quincke has justly stated that the liver is the central organ of metabolism. While other tissues may be involved to a certain extent, the serious forms of toxæmia are nearly always accompanied by profound pathological changes in the liver cells and parenchyma. Whether these changes are primary or secondary to the general metabolic disturbance is difficult to state at the present time. In the fatal cases that occur in early pregnancy, a great variety of pathology may be found. The liver may be normal, slightly increased or markedly reduced in size. In the milder forms a diffuse granular and fatty degeneration is found. Hemorrhage is rare. In pernicious vomiting, we find, in addition, an area of necrosis in the central portion of the cell extending more or less toward the periphery. This latter part is granular. The intralobular tissues are normal in appearance. In acute yellow atrophy, the necrosis is extreme and may interrupt the hepatic function completely. The cause of such rapid destruction of the liver parenchyma is some excessively irritant ferment, and is ascribed by Ewing and Wolf to the presence of extravasated bile.

These early toxæmic cases are characterized clinically by vomiting, rapid pulse, various nervous disturbances and decided weakness. Pruritis, salivation and neuralgias are common. Jaundice is the exception. The urinary findings are low urea, high undetermined nitrogen, high ammonia excretion and indicanuria. Albumin may be absent or present in small amount. The presence of albumin in the urine at this time does not invariably denote disease of the kidney tissues. The failure of the liver to synthesize the irritant toxins derived from both maternal

and fetal sources results in irritation of the healthy kidneys during the process of elimination and albumin is found in the urine. When the liver action has been restored, the toxins are neutralized, albumin disappears from the urine and the kidneys, if not too greatly damaged, recover in a short time. This type should be called hepatic albuminuria.

If the theory of Folin is true, it should be possible to estimate the degree of destruction of liver tissue by an analysis of the urine. Normally, the amount of nitrogen excreted as ammonia is five per cent. Williams claims that when this percentage is under ten, the patient is not toxæmic except in a mild degree. If the percentage rises over ten, not only is the cause toxæmic, but the pregnancy should be at once terminated.

It is to be remembered, however, that many of these patients are starving individuals, living upon a low and nearly proteid-free diet, and much of the nitrogen found in the urine is not the result of faulty liver action, but is derived from combustion of the tissues of the body. In starving adults, in phlethoric individuals and in the cyclic vomiting of children, this high percentage of ammonium nitrogen may be found in the urine wholly independent of toxæmia. Cases of high ammonia percentages are being reported where a non-operative treatment was carried out, and the patients recovered. On the other hand, the writer has been compelled to terminate gestation in several instances because of threatening clinical symptoms when the nitrogen percentage was below ten.

One of the greatest drawbacks in the estimation of nitrogen ammonia is the difficulty of the technique employed. Folin's method is accurate but is too complicated for the general practitioner and necessitates the assistance of a chemist. It requires several hours for the complete test. Furthermore, many such tests may be necessary in a single case as the findings are apt to vary day by day. The amount and kind of diet should be studied in connection with the result obtained by the test.

In lieu of more definite information on the subject, we may state that the estimation of nitrogen excreted as ammonia as determined by Folin's or Kjeldahl's technique is the most accurate method of determining the presence and degree of toxæmia of pregnancy at the present day. By this test we may correctly estimate the importance of otherwise trifling signs and gauge the proper time to dispense with medical treatment and resort to surgical interference. The test is not always accurate, however, and the findings should be studied in connection with the clinical evidence in order to indicate the proper treatment.

All patients in the early months of pregnancy who are suffering clinically from toxæmia and whose nitrogen ammonia is relatively high, should be placed at rest in bed upon a milk diet for a period of seven to ten days. During this time, special attention is to be paid to securing free action of the bowels, kidneys and skin. If the condition does not

improve, if the nitrogen ammonia tends to increase, if emaciation progresses, the uterus is to be emptied without further delay.

If albumin and casts are present in the urine in association with the above findings, it is preferable to induce abortion rather early than to place much confidence in the efficacy of medical treatment. These cases are disposed to cause trouble later on in pregnancy.

The principal form of toxæmia developing during the later months of gestation is eclampsia. Whether this form constitutes a distinct entity apart from that of the pernicious vomiting is a disputed question. Arguments pro and con have been raised. Williams believes that the two diseases are distinct in all their phases, while others hold that they differ only in degree. It is a noteworthy fact that former attacks of pernicious vomiting predispose to eclampsia, and that nephritic lesions combined with poor elimination of the body toxins are commonly associated with this "disease of many theories."

Again, in the hepatic form, the liver is the chief organ involved. The first changes occur in the liver cells, the endothelium of the capillaries and the peripheral portions of the lobule. As eclampsia develops, these cells assume a reticulated and vacuolated appearance. The interlobular vessels soon become thrombosed. A constant factor is the congestion and dilatation of the capillaries in the peripheral portion of the lobule. Because of poor circulation, and the increase of fibrin in the blood, focal necroses appear and subcapsular hemorrhages are commonly found. In advanced cases the picture is similar to that of acute yellow atrophy. Schmorr was enabled to recognize these findings in the great majority of his autopsies and considers them pathognomonic of the condition.

In the nephritic form of eclampsia, the kidneys bear the brunt of the battle. These organs show changes varying from congestion to severe nephritis. Schmorr was able to find but one healthy kidney in 73 examined. Thrombosis of the smaller vessels was commonly observed. If pregnancy develops during the course of a chronic nephritis, the occurrence of eclampsia is favored.

Other changes frequently found in the eclamptic autopsy were emboli of decidual, syncytial and fat cells in the lungs, fatty degeneration and thrombosis of the vessels of the heart and thromboses and hemorrhages in the brain. Briefly, eclampsia is characterized by multiple thrombi, hemorrhages and necroses in the various organs, an increase of fibrin in the blood and a relatively high toxicity of the body fluids.

Many experiments have been made to determine the toxicity of the various fetal appendages. The placenta has been a popular object of study. Schmorr found that placental cells were carried by the maternal blood to distant portions of the body, but later observations have shown that this may occur in the absence of eclampsia. Veit states that the entrance of placental cells into the circulation produces a poison that acted as the direct cause of the convulsions. Ascoli went further and claimed that a new substance—lysin—was formed which dissolved and

neutralized the action of the cells. If a great deportation of cells takes place, an excessive quantity of lysins is formed and eclampsia results. Dienst has recently claimed that an increased number of leucocytes is formed during gestation. These cells are destroyed in the placenta and a ferment is liberated that causes the convulsions. He believes that the impending storm can be foretold by a blood examination during the later weeks of pregnancy.

The Italian writers have studied the thyroid and parathyroid bodies. The internal secretion from these organs has a certain influence upon the pregnant woman. These authors believe that the auto-intoxication which fulminates in an attack is due to a deficiency of these secretions, and that they act as an antidote to certain excretive products given back by the fetus to the mother. Both glands have been extirpated from pregnant animals and they have died in convulsions. Autopsy revealed the conditions peculiar to eclampsia. Eclamptic women have been treated with the extract and have recovered in some cases. Further work is necessary to substantiate this theory.

Efforts have been made to inject an extract of the placenta from an eclamptic woman into the lower animals. These animals have frequently died in spasms, but the value of the tests have been overdrawn. As pointed out by Lichtenstein, these fatal effects are due to the injection of animal tissue, decidual and other cells and organic debris. If all animal tissue has been filtered prior to the injection, the animals seldom die. The results are only toxic phenomena common to all intoxications from animal albumin.

Eclampsia is still the disease of theories and we have, as yet, reached no positive conclusions.

Considerable attention has been directed to what is termed the eclamptic state—a condition very similar to eclampsia, but without convulsions. Such cases have been reported by Schmorr, Reinecke, Liepmann, Esch and others. The toxins of eclampsia do not always have the same action on the central nervous system. They consist of a convulsive toxin and a general poison. If the latter is in abundance, a paralysis of the nervous system sets in, similar to that produced by the ingestion of certain known poisons, marked changes occur in the vital organs and death results without convulsions. If the former predominates, the clinical picture is that of convulsions.

The cases of prodromal eclampsia seem to show that convulsions are not absolutely included in the clinical picture, a statement which many authorities will not accept. Nevertheless, this condition is serious and warns the medical attendant to be on his guard in treating this condition effectually in the early stages. While there are exceptions, the great majority of cases of eclampsia with convulsions give a definite warning of the impending attack that may continue for several weeks prior to the seizure. A pulse of high tension, disturbance of vision, headaches, neuralgias and the changes in the urine are characteristic. The people are

more and more recognizing the necessity of coming under medical care early in pregnancy and consequently, many of these cases can be avoided. It is unwise to place too much confidence upon the urinary findings in the so-called hepatic eclampsia as the urine may be practically normal.

While we are uncertain as to the cause of eclampsia, we have made progress in the treatment of the disease. In a given eclamptic woman with convulsions, we believe that a progressive injury to the vital organs is taking place. If the injury inflicted before delivery is mortal, the patient will die in spite of any treatment whatever. If the injury is not mortal, the best means of saving the mother is by a rapid delivery of the child and placenta. The convulsions generally cease after the child is delivered. Schauta found this to occur in 54 per cent. in 185 cases, Ohlhausen in 80 per cent. in 804 cases, and Seitz in 74 per cent. in 147 cases. Furthermore, it makes little difference how the delivery was effected, whether by spontaneous labor, forceps, version or perforation. The convulsions cease as readily after one method as the other, and the maternal mortality is unchanged. Dührssen saw 26 per cent. die after normal labor, and 26 per cent. after operation. Seitz observed 16 per cent. in both instances.

Rapid delivery by operative methods has reduced the mortality in Zweifel's klinik from 32 to 15 per cent. and in Bumm's klinik from 30 to 14 per cent. In selected cases, where delivery was effected immediately after the first convulsions, these same operators reduced their mortality rates to 6.5 and 2.5 per cent. These results from two large European clinics prove that the early removal of the child from the uterine cavity is the best treatment for eclampsia. The choice of methods for delivering depends upon the conditions present in the case. During the second stage, the selection is not difficult. In the first stage and before labor has begun, the question of *accouchement forcé* and vaginal Cæsarean section are to be considered. If the cervix is long, closed and rigid, the vaginal section is indicated, but difficulties may be encountered that cannot be overcome even by the expert. Rapid delivery during pregnancy, where the technical difficulties are great, is frequently more dangerous to the mother than the eclampsia itself. It is a wise procedure to let the patient bleed after labor if possible. The loss of blood relieves the high tension and removes a portion of toxins from the body. If the uterus does not bleed freely, 500 ccm. may be taken by phlebotomy.

In the medical treatment, morphine and chloroform are being used less frequently than heretofore. Morphine interferes with elimination through the kidneys and tends to increase the comatose condition. Chloroform may be used but should not be kept up for hours as it causes fatty degeneration of the heart muscle. Ether is better. Morphine (gr. $\frac{1}{4}$) may be given at the onset and repeated in 30 minutes if necessary. Chloral (gr. 45) may also be given per rectum and repeated

in two hours. Saline infusions, veratrum and hot packs given after delivery are beneficial.

In these rarer cases where the convulsions persist after delivery, while the amount of urine decreases steadily, the operation of decapsulation of the kidneys, as recommended by Edebohls, has been used. About twenty operations have been performed and sixty per cent. of the mothers saved. The principal difficulty is to determine the proper time for operation. Late operations are always useless.

Finally, we may state that the general tendency is to look upon eclampsia with a great deal of respect, and to resort to surgical methods of terminating pregnancy rather than to depend upon medical measures, believing that the removal of the products of conception from the uterine cavity will most certainly aid in restoring the mother to her former health and strength.

4433 Lake Avenue.

THE ART OF REFRACTION.*

By JOHN GREEN, JR., M. D., St. Louis, Mo.

The major part of every oculist's work, variously estimated at from 50% to 75%, consists in measuring the refraction of the eye. Since the publication of Donder's classical work, "The Anomalies of Accommodation and Refraction of the Eye,"—several generations of oculists have given this subject earnest consideration and careful study. The publication, by Snellen, of a standard series of test types, the invention of the various charts for the detection and measurement of astigmatism, the objective measurement of the refraction by the ophthalmoscope, the invention of the ophthalmometer, the use of cycloplegics, and lately the development of the shadow-test, are earnest of the universal efforts to secure means of accurately measuring the refraction of the eye. One might naturally infer that, as a result of this exhaustive study, the methods of examination would be definitely fixed. That this is far from being so I am sure all will agree. Rather it appears that there are scarcely two oculists who, in all particulars, follow the same routine. Granted that there is more than one way to kill a cat, and that all roads lead to Rome, it seems rather extraordinary that there should not be some "best method" approved by the preponderance of authority.

Despite the thorough manner in which methods have been discussed, there still remains serious disagreement on some of the essential points. If we listen to the "Philadelphia School," for instance, we learn that an attempt to measure the refraction without a cycloplegic is little short of criminal, and will inevitably be followed by failure to relieve the symptoms. Our friends in New York, ridiculing the Philadelphia idea, pin their faith to the ophthalmometer and forswear the use of cycloplegics. And thus the merry war is waged to the confusion and bewilderment of the young oculist.

The writers of text-books vie with one another in giving lucid and minute descriptions of ocular diseases, pathologic ocular lesions and methods of treatment. *Per contra*, there seems to have been a conspiracy to wrap the subject of refraction in an impenetrable veil by discussing it in abstract generalities. Granted that practical refraction can only be learned by contact with patients in the refraction room, that fact should not excuse the vague, and generally unsatisfactory, treatment which the subject receives in the average text-book.

The subject being in this chaotic state, it follows that the beginner in refraction, not being able to select a method which has the weight of

*Read in the Eye, Ear, Nose and Throat Section at the Annual Meeting of the Missouri State Medical Association, Jefferson City, May, 1909.

authority, is perforce compelled to work out his own salvation. He will weigh this and that suggestion and finally, by a process of selection, will adopt a routine, which, in his estimation, fulfills the requirements. In this paper I desire to present my own method, without claiming for it any conspicuous merit. The details will be gone into somewhat at length as I desire to escape the charge of abstractness and vagueness. I do not claim that the method is infallible and have no doubt that many points will be brought out in the discussion which may lead me to modify my present routine. It is only by a free interchange of views that we shall ever arrive at anything like a satisfactory and generally accepted method.

In the first place I have styled my paper the "Art of Refraction," and by that I mean the art of selecting lenses which, in any given case, will abolish the symptoms for which the patient consults us. We should never forget that the patient consults us to secure relief. He is not at all enthusiastic that we, in our pride, have learned to measure his static refraction to the $\frac{1}{8}$ th of a diopter. He wants a glass that will enable him to perform his ocular function without strain or difficulty. He does not wish to be forever reminded that he has a pair of eyes. He demands relief from pain and from headache. If we do not give him this, we have not mastered the "art of refraction," however skillful we may be in its scientific application.

As a preliminary to the study of a case of refraction, I deem it important to secure a general idea of the patient's physical condition, with especial reference to recent ailments. I believe that the oculist should approach every case primarily from the standpoint of the physician. As, in most cases, it is not feasible or practicable to subject the patient to a general physical examination, it follows that we must depend mainly on the anamnesis to furnish a clue to the origin of symptoms. The inquiry should be directed especially to eliciting a possible nasal or accessory sinus involvement; nor should we neglect to ask questions with respect to the general conditions, especially gastric and intestinal disorders, and, in a woman, pelvic and menstrual anomalies.

By thus obtaining at the outset a general survey of the patient's general condition, it is often possible to direct our inquiry at once into channels proper for the immediate elucidation of the problem at hand. In my own experience it is surprising how frequently I have come upon a train of symptoms that led me immediately to abandon ocular examination and to refer the patient to a rhinologist, a neurologist, internist or a gynecologist for examination. In a word the oculist's attitude at the conclusion of his history taking should be, either that the case is not primarily within his jurisdiction, or, by the reasonable exclusion of extra ocular factors, that the origin of the symptoms depends on uncorrected ametropia or muscular imbalance.

A discussion with respect to the previous ocular history is then entered into and I make it a point to secure a consecutive history of any

and all eye-symptoms from the earliest age of the patient to the present. If headache exists, its kind, periodicity, location, etc., is discussed. The ability to use the eyes under various conditions is entered into, and the occurrence of local or reflex manifestations is dwelt upon. By thus entering systematically into the subject, facts are frequently elicited which may have a distinct bearing on the present management of the case. The next step consists in taking the vision of the patient for distance and near, with each eye separately and without a correcting glass (I hope I may be pardoned for alluding to many perfectly obvious points, but, as I stated, I desire to take a personal view and to escape the charge of vagueness). Immediately upon the conclusion of this test I make a careful examination with the ophthalmometer. In the presence of astigmatism I determine with all accuracy the axis and amount of the corneal astigmatism to the end that I may have at the very outset a guide to the general "roughing out" of the case. Let us suppose that V without lens is 6-8, and that the ophthalmometer indicates an astigmatism of 2 D. with the axis at 90° . It is fair to assume that the refraction is a hyperopic astigmatism. I immediately place a plus 3 Sph. on both eyes and take the vision first with the two eyes then with each separately. The vision will probably be found to be 6-10 or 6-12. Wearing plus 3 Sph. the patient is then allowed to wait for 10-15 minutes in the waiting room to secure, if possible, some relaxation of his accommodation. On his return to the refraction room, his attention is at once directed to the astigmatic charts—and I greatly prefer the charts of Verhoeff—and he is asked to select the sharpest and blackest line. If, as is probable, he selects the 90° , I substitute the second chart and begin by adding minus cyls. at 180° beginning with $-.25$ and substituting successively stronger — cyls. in increasing strengths until the two principal lines are equalized. Let us suppose that on the addition of -1.5 cyl., axis 180 , the lines are rendered uniform. Vision has now risen to 6-8. A weak — sph. (.25 D.) is added and the patient's vision has risen to 6-6 plus. The patient is now asked to confine his attention to the finer lines comprising the quadrants, and he is asked to compare the upper and lower sections (of horizontal lines) with the lateral sections (of vertical lines). It will frequently be found that, although the principle or wide lines appear perfectly uniform, there is something in favor of one or the other set of sections. Usually the addition of a $-.12$ or $+.12$ cyl. axis 180° will suffice to render the entire diagram perfectly uniform. Vision will now be 6-6 or better. A slight shift in the axis of the cyl. will often appreciably sharpen the letters.

I have dwelt thus minutely on the well-known "fogging" method because I believe that, patiently applied, it will, in the great majority of cases, yield a measurement which, while it may differ somewhat from the static refraction, is of great value in indicating to the examiner the glass which the patient will accept with comfort. Those who have not adopted this, or a similar method, will be surprised to find how fre-

quently the result approximates the static refraction. Of course, if we are dealing with an accommodative spasm, the difference between the two results will be considerable.

After the fellow eye has been similarly tested, the patient is placed in a comfortable position, in a good light. He is given a recent issue of a well-printed magazine (preferably one with several sizes of type) and is instructed to *read continuously without lifting the eyes from the paper*. This test is prolonged for from $\frac{1}{2}$ to $1\frac{1}{2}$ hours. From time to time the examiner approaches the patient and inquires how all is going; if the answer is satisfactory, the patient is directed to continue to read.

By this test several important points are determined: In the first place, is the correction comfortable and pleasant or otherwise? Second, does it at first seem uncomfortable, and as the reading is prolonged become more acceptable? Third, are symptoms, such as blurring or wavering of the letters, drawing sensations, pain in the eyes and head, reflex nausea, etc., less marked or abolished or *vice versa*? In a word, does it appear likely that this manifest correction will ameliorate or abolish the symptoms, or is the patient undecided as to the effect of the glasses, or, on the contrary, do they seem to accentuate the symptoms?

This preliminary examination, occupying, as it does, the better part of two hours, leaves the patient in a state of ocular and mental fatigue. At this point the following prescription is given: Homatropin hydrobromate, gr. 1; cocain hydrochlor, gr. $\frac{1}{4}$; aquæ dest, 3ss., with directions to instill one drop in each eye at bed time and on arising the following morning. The patient is directed to bring the drops to the office, where the office assistant begins the instillation at regular intervals of 10 minutes until five drops have been instilled. Thirty-five minutes after the last drop has been used the examination is begun by taking the distant vision of the eyes now thoroughly under the influence of the cycloplegic.

Immediately thereafter the patient is placed in the dark room and the examination of the refraction with the skiascope made. It is unnecessary to enter into the details of this method so familiar to all of you. My preference is for the method with the plain mirror, with the source of illumination above and a little behind the patient's head.

To facilitate the determination of the distance between the examiner and the patient, a tape one meter long is attached to the trial frame. After determining the point of reversal for the meridian of least refraction, cylinders of varying strengths at the appropriate axis are added until reversal is obtained to all meridians. Great pains are taken to determine the exact axis as well as the amount of astigmatism as it has been my experience that the more careful one is in applying this test, the more nearly will his result coincide with the trial-case measurement.

The lens combination, as determined by skiascopy, is then placed before the eyes and the vision taken. The next step consists in varying the

combination of lenses to determine whether some combination, other than the one indicated by the skiascope, may not be preferred. To this end I have adopted the routine suggested by Duane and styled by him the "Round of the Trial Case." The correction being in general a spherical glass A. and a cylinder B. I add, one after another.

1. A convex sphere, say $+ .5$.
2. A convex cylinder with its axis in the axis of B
3. The same cylinder with its axis at right angles to B } $+ .5$ cyl.
4. A concave cylinder with its axis in the axis of B
5. The same cylinder with its axis at right angles to B } $- .5$ cyl.
6. A concave sphere. $- .5$ sph.

These additions form, as pointed out by Duane, a series of combinations which represent practically all changes that can be made in the sphero-cylinder combination A. B. Then if A. and B. are both convex, the additions made will be:

1. Add to A. and leave B. alone.
2. Add to B. and leave A. alone.
3. Diminish B. and add to A.
4. Diminish B. and leave A. alone.
5. Increase B. and diminish A.
6. Diminish A. and leave B. alone.

As soon as, in making the round, it appears that the added glass has improved vision, the resultant combination is substituted, and the "Round of the Trial Case" repeated, this time with .25 D. spheres and cylinders.

I very shortly reach the point where I get a combination that is not improved by any addition ($+$ or $-$ sphere or cylinder). Slight variations are then made in the axis of the cylinder, which, if accepted as an improvement, is adopted. A disc with a 4 mm. circular opening is then slipped in front of the combination in order to exclude extra pupillary rays. If the combination is correct, this will have the effect of materially sharpening the letters.

The examination under a cycloplegic concluded, the patient is directed to return in a few days for the post-cycloplegic test. This is conducted in two ways: First, the method with the aid of astigmatic charts (described as the preliminary test) is used and the result reached in a precisely similar manner; second, the combination obtained under cycloplegia is placed before the eyes and by conducting a "Round of the Trial Case," it is determined to what extent the cycloplegic finding may have to be modified. Needless to say, the results of these two methods generally agree very closely.

By adopting the above described routine, the examiner is in possession of the following facts:

1. A knowledge of the dynamic refraction carefully worked out.
2. A knowledge of the actual behavior of the eyes for far and near under the influence of this "dynamic" correction.
3. A knowledge of the static refraction and of the difference between the dynamic and the static.
4. A knowledge of the manner in which the eyes respond to tests after the cycloplegic has worn off.

(I may say parenthetically that as this paper is confined to a discussion of the "art of refraction," no allusion will be made to abnormal functioning of the extrinsic ocular muscles, or muscles of accommodation. Such abnormalities will often demand modification of the refractive findings.)

The examiner, in possession of these facts, must then determine precisely the strength and combination of lenses that in all likelihood will give the patient *immediate relief*. How far shall the prescription deviate from the manifest correction? Shall a balance be struck between the dynamic and the static result? If the axis of the cylinder differ in the two measurements, which shall be accepted? Shall the full static result be accepted? These are the principal problems that confront us and demand for their solution the nicest tact, judgment and discrimination, which can only be acquired by prolonged contact with patients in the refraction room.

Let us not forget that the patient comes to us for relief, immediate relief. Do oculists who order a pair of glasses on the basis of the static result alone, and tell the patient that he will get used to them in a month or so, realize that they are offering a stone where the cry is for bread? Why is it necessary to torture a patient with static glasses which our preliminary and post-cycloplegic tests indicate will not be tolerated? Is it not more rational to prescribe the glass which will give the patient immediate comfort and satisfaction? As we have a knowledge of his static refraction, we can foretell, with reasonable certainty, that, as time passes, more and more of his latent error will become manifest. By dealing frankly with the patient, impressing upon him our desire to give him immediate relief, and pointing out that the first correction must inevitably be replaced by a stronger one after the lapse of a certain time, we invite his coöperation to the end that his case may be carried to a successful issue.

One word with reference to the adjustment and mounting of the lenses. I have gained the impression that, as a general rule, oculists are content with indicating the formula of the lenses to the optician, and leave the details of the mounting to his judgment or the fancy of the patient. This practice might be defensible if the judgment of the optician were invariably sound, or if the fancy of the patient always demanded the mounting best adapted to his particular needs. That this

is very seldom the case, I am sure all of you will agree. The oculist is the one to decide what mounting will be most appropriate for each individual case. If his views and the patient's do not coincide (as is frequently the case), he should carefully give the reasons for his position and use every effort to win the patient to his way of thinking. I have so frequently seen the work of competent oculists nullified by improper mounting of the lenses, that I feel that we should, if only for our own protection, insist on the carrying out of all the details in accordance with our own ideas.

625 Metropolitan Bldg.

CASES OF CEREBELLAR TUMOR, WITH THE STATISTICS OF THIRTY OPERATIONS.*

By HARVEY CUSHING, M. D., of Baltimore.

CASE I. In this patient the operation was performed eight months ago; a tumor was removed from the right cerebellar hemisphere. One of the photographs (Fig. 1), which I will pass around, shows the tumor in its natural size, and the other (Fig. 2), the back of the patient's head a few days after the operation. He has done well; has grown fat and strong, and is back at work. There was a gain of fifty pounds in weight in the early weeks after the operation.

The symptoms in this case were not very definite. There was some slight ataxia, a high grade of choked disc, headache and a little nystagmus—enough we thought, to justify making an exposure of the cerebellum. We found and extirpated this cystic tumor, which Dr. Mallory regards as a glioma, but I think you can see that it is definitely encapsulated; and this brings up the question of the gross characteristics of gliomata—whether they are always infiltrating, or whether they are sometimes encapsulated.

In spite of the advanced grade of choked disc present before the operation, the patient has fortunately escaped with but very little disturbance of vision. You can see that he now walks without any ataxia and looks healthy and vigorous.

CASE II. This patient, a physician, who has kindly consented to come before this meeting, is one of four of these suboccipital cases now in the hospital. Though operated upon only three weeks ago, I think you can see how solidly and well the wound has healed (Fig. 3), with perfect use of the muscles of the neck. The cervical muscles were divided and a bilateral bone defect made in the suboccipital region, including the posterior half of the foramen magnum, as in all operations of this type. We did not find a growth in this case, the procedure resulting merely in a suboccipital decompression. There has been a marked amelioration in symptoms which had been thought by many to be purely of labyrinthine origin. His choked disc has completely subsided. He is rapidly gaining weight and strength and promises soon to become as vigorous as the patient you have just seen. There is always the possibility, after such a palliative measure, that in the course of time a second operation may reveal a growth which can then be enucleated.

CASE III. This young man is a carpenter, 24 years of age. Four years ago he began having headaches and unsteadiness of gait, and came to the Johns Hopkins Dispensary, where the diagnosis of "nervous headaches" was made. His eyes were examined at the time and nothing abnormal found. During the following years he grew progressively worse and pressure symptoms became pronounced. Eight weeks ago, in another city, an operation was performed on the left side of the head, with aspiration of what was supposed to be a cyst—unquestionably aspiration of the lateral ventricle.

*Remarks upon cases exhibited before the Johns Hopkins Hospital Medical Society, May 3d, 1909.

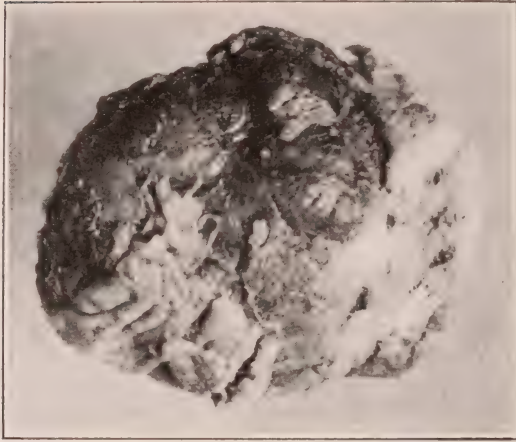


Fig. 1. External view of tumor removed in Case I, with attached fragments of cerebellum. (Natural size.)



Fig. 2. Case I. Photograph taken prior to patient's discharge from the hospital, to show situation of incision.

When he came under our observation the symptoms pointing to a cerebellar lesion were unmistakable. We thought they indicated a right extracerebellar (cerebello-pontine) tumor, such a lesion as I will show in one of these specimens; but the growth proved to be a left intra-cerebellar cystic tumor—a cystic glio-psammoma about the size of a hen's egg, and I suppose actually a rather benign lesion—which was entirely extirpated two weeks ago. This was a striking illustration of the advisability of a bilateral exposure for these cerebellar lesions.

I think you can see here the typical cross-bow incision by which the approach is made in these cases (Fig. 4). Unfortunately the patient's vision, even before the first operation was performed, was almost completely lost. Some vision is apparently returning, and he can now count the fingers of the hand, but I fear that we cannot expect much more than this. The choked disc is rapidly subsiding, leaving exposed the atropic nerve head. In other respects he will, I am sure, make a complete recovery.

Comment. Of the two other cerebellar cases at present in the hospital one had a cerebellar cyst which could not be totally extirpated, as in the patient just shown (Case III.), but the contents were evacuated and a portion of the thin wall removed. She, too, promises to make a satisfactory recovery, fortunately with little if any loss of visual acuity. The other patient is one in whom no lesion was found, as in the second patient shown you tonight (Case II.), but it is hoped that the operation will serve to relieve his pressure symptoms.

Some days ago I received a letter from a friend in a distant city asking for the statistics in regard to our cerebellar cases. I have looked them up and think the figures may be of interest. As a matter of fact, they are the real occasion of my making this report this evening.

There have been thirty operations for known or presumed cerebellar tumor, with the permanent bilateral removal of bone through the cross-bow incision in the overlying tissues. In no case has the wound been drained.

At the time I gathered these notes there had been two deaths, but within the past two or three days we have lost a child who had a cerebellar tumor, too radical an attempt to remove which was made; so that now, in this series of thirty-one cases, we have had three deaths directly attributable to the operation. One of them—I will show you the brain—was a patient with a typical cerebello-pontine lesion—the benign endothelioma which nestles in the recess of the medulla, pons and cerebellum—a lesion we now regard as very favorable for operation. The patient unfortunately died from pneumonia. This was one of our earliest cases and was undertaken before we had a satisfactory table-extension which ensures free respiration during this particular operation. Death occurred in a second case on the operating table; the patient, who was completely blind and deaf, had a large vascular tumor involving the region of the corpora quadrigemina, in the investigation of which bleeding occurred into the fourth ventricle, with immediate respiratory failure. In the other cases, with the exception of the one I will refer to in a moment, there have been no operative complications whatsoever.

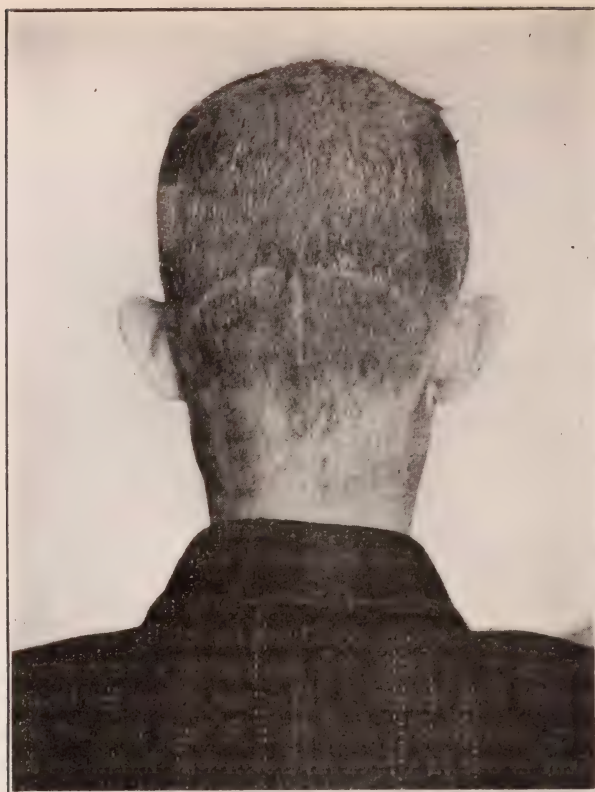


Fig. 3. Case II. Photograph taken prior to patient's discharge from the hospital, three weeks after operation, to show usual solidly healed and inconspicuous wound.

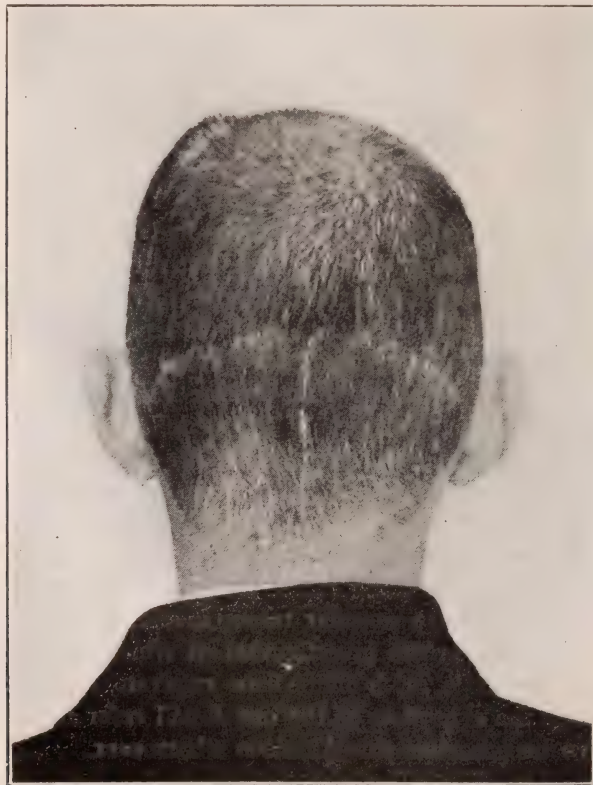


Fig. 4. Case III. Photograph taken three weeks after operation, showing usual solidly healed incision. Note situation of slightly elevated osteoplastic flap made at previous operation over left cerebral hemisphere.

The tumor has been disclosed at operation in thirteen cases. Three of them were more or less solid intracerebellar tumors which have been extirpated; four were cysts that were simply evacuated or a portion of the wall removed; and four of them were benign extracerebellar (cerebello-pontine) tumors which were wholly or partially removed. There were two cases in which tumors were found and considered irremovable, with little or no improvement after the operation.

There have been twelve cases in which the tumor has not been found, the operation resulting in a simple suboccipital decompression, as in the case of the second patient shown you tonight. Two cases from this group were operated upon subsequently; in one a cyst was found and evacuated; in the other a solid tumor was removed.

These figures I think are gratifying, especially when one realizes that cerebellar tumors are considered by many to be the most unfavorable for operation of all growths of the encephalon.* It is our impression to the contrary, that they are more likely to be accessible, are capable of an earlier diagnosis, and are less likely to leave symptomatic disturbances after removal than in the case with brain tumors situated elsewhere—certainly the statistics are very promising, with eleven instances of removal or evacuation of cysts in this series of thirty-one cases of cerebellar operations.

One interesting fact has been brought out by the review of these cases, namely, the frequency of mistakes in diagnosis. Many of these patients undoubtedly had possessed a lesion for years; one of them, for example, was treated for deafness for eleven years before an "acoustic neuroma" was suspected, owing to the onset of pressure symptoms. With a reasonable assurance that this extensive operation can now be conducted with a minimum of risk our tendency has been toward a prompt exploration in suspicious cases; but nevertheless, in spite of this tendency, in a recent case we have made a serious diagnostic blunder.

The patient, a baby 3 years of age, was in the hospital a year ago under my care. At that time I had no suspicion that the trouble might be due to a cerebellar tumor, but considered the case a typical one of simple or essential hydrocephalus, as did many others who had seen the patient. The father, a physician, recently brought the child back, in the hope that we might check the advancing enlargement of the head by some radical method of ventricular drainage. The suspicion of a possible cerebellar lesion was aroused at this time, and a large cyst was disclosed at operation. I attempted to extirpate the cyst, with a fatal result, for the child died suddenly a few hours after the operation—

*I feel confident that the adherence by C. H. Frazier to a unilateral method of approach to cerebellar tumors, advocated likewise by Krause, is the occasion for his and Dr. Spiller's repeated statement that these are the least satisfactory of all brain tumors for operation. It may necessitate, as Dr. Frazier has explained, the partial removal of the cerebellar hemisphere to gain access to the lateral recess. The matter has been reviewed by P. Lecène in the *Journal de Chirurgie*, 1909, Vol. ii., p. 36.

possibly a "thymus death," as we found the characteristic glandular enlargements at autopsy. Had I satisfied myself with a simple aspiration or partial removal of the cyst-wall in all probability we would have saved the child. The brain shows very well the large cystic cavity and the great dilatation of the ventricles (Fig. 5).

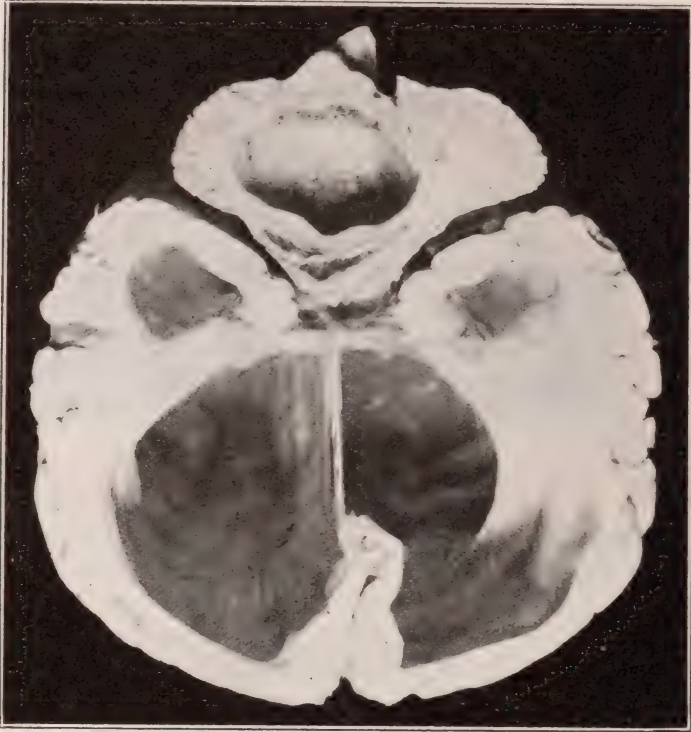


Fig. 5. To show high grade of internal hydrocephalus consequent upon a cystic glioma of the cerebellum. The margin of growing tumor is apparent at upper edge of cyst.

The first of the patients presented was seen by one of my colleagues about a year ago. The history and examination revealed nothing except the vomiting and headaches and the condition was naturally supposed to be one of simple gastric disturbance and was so treated for a time. The second patient, as I have said, was thought for a long time to be the subject of labyrinthine disease, and other illustrations might be given. A particularly large number of these patients have at one time or another been treated for hysteria.

The mistaken diagnoses really make a professionally disconcerting record. A frequent result of the delay is blindness. The last patient shown (Case III.), with a successful extirpation, is shut off, for this reason, from future ability to earn a livelihood by his previous trade. Out of these eleven successful cerebellar operations, six patients have been

totally blind at the time of operation, and this points the moral of these remarks. The first patient shown this evening (Case I.) was operated upon for what would ordinarily be regarded as very inconclusive local symptoms, but feeling that the exploration is attended with no great risk the chance was taken and the tumor found and removed before there was any permanent damage to the optic nerves.*

*Addendum. Since making this report there have been four subsequent operations with recovery. In two of them the lesions were not disclosed. In the third a cerebello-pontine endothelioma was enucleated; and in the fourth a suboccipital osteoma, with cerebellar symptoms due to indentation of the hemisphere was successfully removed.

This makes thirty-five operations; with three fatalities; with thirteen successful extirpations or cyst evacuations; with two exposures of inoperable growths; the condition remaining practically unimproved despite the decompression; and with seventeen palliative decompressions.

ACUTE PROSTATITIS.

By HENRY JACOBSON, M. D., of St. Louis.

Extension of the gonorrhœal inflammation from the posterior urethra into the prostatic ducts and glands is the most frequent cause of acute prostatitis. The use of instruments in the posterior urethra causing slight injury of the prostate, thereby opening an avenue of infection for the bacteria that are present in the urethra, or that are causing the cystitis, or as has been demonstrated by experiments to pass from the rectum through the intercommunicating blood vessels and lymphatics, may cause it. La grippe, tuberculosis, typhoid fever, scarlet fever and smallpox may cause inflammation of this gland. Pyæmia may cause abscess of the prostate. Masturbation and excessive intercourse are supposed to be a cause of catarrhal prostatitis.

There are three varieties of acute prostatitis. First, catarrhal inflammation, which is usually mild, involving the mucosa of the prostate, ducts and glands; this is especially localized in the region of the mouth of the ejaculatory ducts. If due to gonorrhœa, the gonococci, epithelial cells, lichen bodies less than in health, pus cells and red blood corpuscles, are found in the prostatic secretion examined under the microscope. In the second variety the follicles are involved. They are filled with exfoliated epithelium, pus and red blood corpuscles. The mouths of these ducts are closed by adhesive inflammation, several of these follicles coalesce and large or small retention cysts result. In the third form, the inflammation extends to the interstitial tissues. There is destruction of the glands, and the interstitial tissues. Round cells in vast numbers invade the inflammatory zone, lymph and fibrin are poured out in abundance from the vessels, and pus can be demonstrated microscopically.

Abscesses form, the size of which are dependent on the limit of the inflammatory zone. This variety is called parenchymatous prostatitis. A cross-section in the first stage of parenchymatous prostatitis shows the swollen, large, succulent prostate of a dark red color. A section of the gland in the second stage demonstrates the invasion of the gland by the pus cells which give it a gray color. In the third stage, that of destruction of part of the gland, we find abscesses.

As the veins of the suprapubic connective tissue, called the cavern of Ritzii, intercommunicate with those of the prostate, septic thrombi may be carried there from the inflamed prostate and form an abscess, as was reported by Kieln (in the Handbook of Urology) in two patients with parenchymatous prostatitis. The same communication occurs with the veins of the bladder and penis. Several cases have occurred in which

gangrene of the penis complicated this severe infection of the prostate. Guyon reports a case, in which upon operation, he found the entire prostatic urethra surrounded by an abscess.

A small percentage of patients with catarrhal inflammation of the prostate present no subjective symptoms. The greater number have increased, and urgent desire to urinate, or slowness and diminished volume of the urinary stream. In the different varieties, according to the severity and the individual affected, there may be a rise of temperature, chills, dysuria, complete or incomplete retention of urine, interference with defecation, hemorrhoids, pressure in the rectum and perineum, pain also in said regions besides in the back, down the thighs, in the testicles and penis. Careful rectal examination reveals a painful, swollen, hot, enlarged prostate with areas of normal hardness. Others are softer, and in the suppurative stages we can often detect fluctuation of the abscess cavity. Fortunately for the patient, the abscess usually ruptures into the urethra, which is the most favorable route. If it has a large opening into the urethra, the cavity fills in from the bottom with granulation tissue and the patient makes a rapid recovery, with a replacing of the destroyed glandular tissue with fibro-connective structure, which causes a contraction of the involved lobe or lobes and as a result more or less atrophy of the prostate gland.

If the abscess cavity is large and communication with the urethra small and narrow, pus and urine are retained in the cavity. The patient may become uræmic, or septic. The infection may spread to the bladder, abdominal walls, or kidneys, causing pyelonephritis and end in the death of the patient. The abscess may extend into the prevesical space, or in the ischiorectal space, or open into the rectum, terminating in a recto-urethra fistula. If it points in the perineum it is easily opened by the attending surgeon. A fatal, but fortunately rare, route for it to take is to rupture into the peritoneal cavity.

Segond (in the Handbook of Urology) reports 144 patients with prostatic abscess that terminated in 34 deaths; 70 patients made a good recovery, and 10 passed into the chronic stage with persisting fistula. In 35 patients the abscess ruptured into the urethra with 10 deaths. In 45 of his patients it perforated the rectum and 7 of these died. There is a very marked increase in the number of recoveries if the surgeon opens the abscess as soon as detected. Therefore it is our duty to urge an early operation, whenever we detect a prostatic abscess. In Segond's collection, the mortality was 25.3 per cent. in those suppurative cases that were treated expectantly, and only 11.6 per cent. in the cases that submitted to an operation. Zuckerkrandl gives a mortality of only 5 per cent. in 20 patients with prostatic abscesses that he operated upon. Casper reports 30 patients in which he employed operative procedure without a death. Hinrich operated upon 32 with two deaths.

The best approach to the abscess is the perineal incision on the side of the urethra, according to which lobe is involved. If both lobes are

involved make the Prost semilunar incision as for removal of the prostate, then open the abscesses, wash out gently with iodine solution or bichloride solution followed by normal saline, and introduce a drainage tube or tubes; wash out the cavity daily and shorten the tubes as needed. The temperature rapidly falls after this procedure. If it again develops in a few days it is due to a new abscess, which must be searched for and opened.

In the acute catarrhal or follicular prostatitis which, as before mentioned, is a frequent complication of gonorrhea, we must stop all urethral treatment, put the patient to bed, with his hips elevated, give a purgative, give internally urinary antiseptics and remedies to control the pain. Usually it is necessary to give a hypodermic injection of morphia and atropine, or give the patient opium combined with belladonna in the form of suppository. Ice cold water run through a rectal thermophore continued for thirty minutes and then repeated every three hours for the same length of time, if agreeable to the patient, will usually prevent the inflammation from terminating in the formation of an abscess. I find many patients in which hot water run through the rectal thermophore, or double catheter, is agreeable and soothing and ice cold water increases the pain. Many patients rapidly recover, others become chronic and have to be treated for months, but ultimately recover.

Chronic Prostatitis. This is a disease that occurs quite frequently and with its far-reaching reflex symptoms, is often mistaken for other diseases. As I mentioned, acute inflammation may terminate in the chronic form. So we have the same varieties, catarrhal, follicular, interstitial or parenchymatous, and the same causes mentioned for the acute disease. Gonorrhea is the most frequent cause. Stricture of the urethra, excessive intercourse, masturbation, cystitis, hypertrophy of the prostate and syphilis, are causes. In this paper I will not take up tuberculosis of the prostate. Proctitis and periproctitis may cause acute or chronic inflammation of the prostate. Some patients referred to us for treatment of their gleet will tell us they occasionally notice, if constipated, while at stool, a slight discharge of whitish fluid from the penis, and perhaps increased frequency of nocturnal emissions. This mild form of prostatic inflammation can be diagnosed by introducing a catheter gently to the cut off muscles and washing out the urethra until the return fluid comes back clear of filaments. Then massage the prostate and have the patient urinate and examine the flocculent sediment with the microscope. This reveals pus cells, red blood corpuscles, sago-like and small lichen bodies.

The great majority of patients with chronic inflammation of the prostate gland present numerous symptoms. There is usually an increased frequency and urgent desire to urinate.

He may have severe dysuria, groaning with pain. Investigators have found the prostate and its capsule very richly supplied with nerves from the lower dorsal, lumbar and sacral plexuses. Also the abdominal sympathetic plexus sends numerous branches into the prostate. Large

nerve ganglia have been demonstrated in this gland and under its capsule. These nerves and ganglia intercommunicate with the nerves of the abdominal viscera, kidneys, sciatic and crural nerves. So during the inflammation of this gland these nerves and ganglia are irritated, compressed and partly destroyed and exhausting impulses, manifested by radiating pains to all the neighboring and distant viscera, occur, as well as neuralgia of the crural and sciatic nerves.

I have a patient under my care, who was sent to me two years ago. At that time he suffered with severe pains in the region of the gall-bladder, also slight pain in small of his back. His disease was diagnosed gallstones, and an operation advised. He consulted another physician who suspected prostatic disease and he referred the patient to me. Upon examination I found two large retention cysts of the prostate that yielded three or four teaspoonfuls of flocculent sediment in the urine passed after massage of the prostate. During the massage of the gland, he stated the pain became worse in the gallbladder region. After a month's treatment, this pain only recurred when he would delay too long in his prostatic massage. At present he can stay away for two months without feeling any pain. The prostatic retention cysts have almost entirely disappeared. He has never had real gallstone colic, nor Murphy's sign of interference with breathing when I pressed deeply in the gall-bladder region. He has not been jaundiced nor had attacks of vomiting.

Notthafft, in *Archives of Skin Diseases and Syphilis*, relates a similar case, in which the patient complained of severe pain in the region of the gallbladder, also in the renal region, which he found was due to chronic prostatitis, and which yielded to treatment of the prostate. At present there are three patients under my care and observation for chronic prostatitis; one has also vesicula seminitis, whose most prominent symptom is neuralgia of the sciatic nerve.

Dr. O. Zuckerkandl, in 1903, removed an enlarged prostate in a young man 27 years old, suffering from chronic prostatitis, having residual urine, chills, high fever, dysuria, loss in weight, radiating pains down the thighs, to the abdomen and back and in the testicles. He manifested these symptoms for three years before the operation, which resulted in a rapid recovery.

The prognosis as regards sterility. As is well known, it is necessary for the semen to be mixed with healthy prostatic fluid to keep the spermaozia alive and for them to retain their fecundating power. As long as we can demonstrate pus cells in the microscopic field, so long is the prognosis bad. We must always remember, even if the lichen bodies rapidly reappear and the pus cells disappear, that the patient may be permanently sterile, due to the obliteration by stricture or compression of the ejaculatory ducts by new fibro connective contracting tissue replacing the normal glandular tissue.

About five years ago a patient was sent to me suffering with acute prostatitis which did not entirely yield to treatment. About six months

after his acute attack, he returned stating that when he had nocturnal emissions the discharge contained blood, and during intercourse, he would have pain above the pubes. His anticipations of indulging again were unpleasantly marred by the fear of the recurrence of this pain. I found evidence of chronic prostatitis, which yielded to treatment. He has not had any recurrence of his symptoms for the last two years.

One patient states that for several years he has erections and is able to copulate, but there is no noticeable emission. This has a psychic effect and as a result his desire for sexual congress has vanished. He, as with a number of other patients, has an inherited neurotic tendency, bad environment and habits which bring on sexual neurasthenia.

Another patient with symptoms of hot head, exhaustion pains in the limbs, suffering with chronic prostatitis and presented as chief symptoms, tenesmus after urinating, radiating pains from the prostate to the neighborhood of the appendix, had his appendix removed against my advice, in Cincinnati, by a noted surgeon, with a recurrence of the pain shortly after the operation. The appendix was apparently normal with the exception of a varicose vein. He has symptoms of depression at times, also crying spells. Insanity and suicide in neurotics may result from chronic prostatitis. Rape may be the result of the irritation and almost constant erection in some negro patients suffering with this disease, as has been mentioned by J. Boehm.

A rare symptom described to me by several patients is that of bubbling above the pubes. I have not been able to find any mention of this symptom in the literature at my command. Our main reliance in treatment is upon emptying the retention cysts of their contents by massage, and I believe the physician's finger is more accurate and is superior to any instrument. Follow the massage by antiseptic irrigation of the bladder.

Gain the confidence of your patients, especially the neurotics, and give them a hopeful prognosis. Listen patiently to their report of new symptoms. These patients should have nerve tonics, regular outdoor exercise, of which the best is walking. If their means permit, general massage several times a week. Look after their diet, see that they obtain as much sleep as possible. If there is vesicular seminitis present, they should be massaged.

If he has urethritis, it should receive treatment. If the inflammation occurs in a patient with true hypertrophy of the gland, it should be removed. Cystitis, if present, should be treated.

The prognosis is good if we can control our patient and he does not become discouraged by the slow progress made.

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MEDICAL AND SURGICAL PROGRESS.

THE ACTION OF THE VARIOUS PREPARATIONS OF ERGOT UPON THE UTERINE MUSCLE.

A REVIEW OF RECENT LITERATURE.

By HUGO EHRENFEST, M. D.

1. DER HEUTIGE STAND DER MUTTERKORNFRAGE.—A. Bennecke (*Arch. f. Gynaek.*, Bd. 83, p. 669).
2. UNTERSUCHUNGEN UEBER DIE BEDEUTUNG DES MUTTERKORNS FÜR DIE GEBURTSHILFE.—Palm (*Arch. f. Gynaek.*, Bd. 84, p. 655).
3. EXPERIMENTELLE UNTERSUCHUNGEN UEBER DIE WIRKUNG DER MUTTERKORN-PRÆPARATE.—E. Kehrer (*Arch. f. Gynaek.*, Bd. 84, p. 610).
4. ERGOTININE CITRATE.—(*Journ. A. M. A.*, December 19, 1908, p. 2161).
5. PHYSIOLOGISCHE UND PHARMAKOLOGISCHE VERSUCHE AN DER ISOLIERTEN GEBÄRMUTTER.—Kurdinowsky (*Arch. f. Anat. u. Physiol. Phys. Abth.*, 1904, p. 372).
6. PHYSIOLOGISCHE UND PHARMAKOLOGISCHE UNTERSUCHUNGEN AN DEN UEBERLEBENDEN U. LEBENDEN INNEREN GENITALIEN.—Kehrer (*Arch. f. Gynaek.*, Bd. 81, p. 160).
7. KLINISCHE BEOBSACHTUNGEN AUF DEM GEBIETE DER GEBURTSHILFE.—Schubert (*Muench. med. Woch.*, No. 26, 1907, p. 1266).
8. KLINISCHE ERFAHRUNGEN UEBER DIE WIRKUNG DES SECACORNIN.—Thomson (*Zentralbl. f. Gynaek.*, No. 22, 1908, p. 2130).
9. PHYSIOLOGIC ASSAY OF FLUID EXTRACT OF ERGOT.—Edmunds and Roth (*Jour. A. M. A.*, December 19, 1908, p. 2130).
10. STANDARDIZATION OF ERGOT.—Weed and Hofer (*University of Pennsylvania Medical Bulletin*, February, 1909).

A very exhaustive article by Bennecke (1) attempts to give an exact picture of the present status of our knowledge concerning the chemistry and physiologic action of ergot and its numerous preparations. He divides the various constituents, thus far isolated, into three groups. To the first group belong the coloring substances, phosphoric acid, fats, cholesterin, lactic acid, mannit, mannan, fungin, etc. They all prove inert. The second group comprises isocholin, ergotic acid (sclerotinic, ergotinic, secalo-amido-sulfonic acid), ergotin or ecbolin, ergotinin, picrosclerotin and clavin. These substances exhibit slight physiologic activity. Bennecke places into the third group the substances which exert a pronounced action and either produce gangrene, convulsions or uterine contractions. Spheclic acid is a strong vasoconstrictor and

easily produces gangrene. According to Kobert and Kurdinowsky, it causes tetanic contractions of the uterus, the action being a peripheral one, *i. e.*, is exerted upon the uterus directly, not by way of the central nervous system. Sphacelotoxin, prepared by Jacoby as a purer form of the acid, shows practically the same physiologic action. It was regarded by him as the ecboic principle of ergot, and in the form of a salt, named spasmodin (*chrysotoxinsäures Natrum*), was used by Palm (2) as a drug capable of strengthening regular labor contractions, also for the purpose of bringing labor on at will. Later investigations have shown that this preparation is extremely unreliable and its manufacturers have taken it off the market. In 1875 Tanret isolated two alkaloids, in his opinion, representing the pure active principle of ergot, a crystalline alkaloid, ergotin, and an amorphous alkaloid which he thought to be a physical modification of the crystalline. Independently from Tanret, shortly afterwards Kraft also isolated two such alkaloids. He named the amorphous alkaloid hydroergotin. In his experiments both failed to show any specific action on the uterus, both produced convulsions and both led to gangrene; or in other words, these two alkaloids seemed responsible for those undesirable by-effects of ergot when used for therapeutic purposes. The claim of Kobert that his cornutin represents the active constituent of ergot has been positively disproved by Tanret. According to Keller, ergot contains but one base, and Kobert's cornutin, Tanret's ergotin and Draggendorf and Podwyssotsky's picrosclerotin, are simply different forms of the same body. Barger, Carr and Dale, according to Bennecke, also isolated that amorphous alkaloid to which they give the name ergotoxin. They found it inactive when given by mouth, producing gangrene when actually resorbed. If the resorption, however, occurred slowly, convulsive symptoms failed to appear, so that they concluded that there is still another substance in ergot responsible for the resulting spasms. According to Bennecke, we have at the present time no positive knowledge concerning those constituent substances of ergot which produce convulsions.

Of special interest to the obstetrician is that substance in ergot which is supposed to exert a specific effect upon the uterine muscle, *i. e.*, the ecboic principle of ergot.

We may be permitted to give here a few historical notes concerning the use of ergot as an ecboic, quoting from an article by Kehrer (3) and a historical sketch, entitled: "From Ergot to Ernutin," published by Burroughs, Wellcome & Co.

It can be assumed that the frequency with which abortions occurred during those terrible epidemics of "St. Anthony's Fire," first suggested the presence of an ecboic principle in ergot. According to Plowright, this action was known to Chinese physicians for many centuries. German and French botanical works of the seventeenth century mention it, and at the end of the eighteenth century, according to Kobert, a governmental ordinance was issued in Hanover prohibiting midwives from using ergot during labor, certainly a proof of the prevalence of this practice at that time. The earliest known direct allusion to the action of ergot on the uterus was made by Lonicer in 1582, and later by Camerarius, who records that women in certain parts of Germany were in the habit of employing spurred grain to accelerate labor. In 1777 Desgranges, having met with several midwives who were accustomed to use the spurred rye in cases of lingering labor, made a great many trials of it and reported successful results. In spite of prejudices and opposition, he con-

tinued strongly to advocate its use, and to his perseverance we no doubt owe, to a very large extent, the use of ergot as a medicinal agent to-day. In America, it appears somewhat doubtful whether its first introduction was due to Hosack or to Stearn. There is reliable evidence that Hosack was the first physician in America to employ ergot to arrest a uterine hemorrhage. On the other hand, it appears that Stearn was the first to use it for accelerating delayed labor. In 1813 Prescott, of Massachusetts, published a dissertation on "The Natural History and Medicinal Effects of *Secale Cornutum* or *Ergot*."

Ever since, ergot has been used by the obstetrician and especially by the gynecologist, at times undoubtedly with marked and prompt effect. But, on the other hand, it cannot be denied that our knowledge concerning the *modus operandi* of this drug up to this day has remained extremely meagre. Bennecke states that at present the ergotin and the ergotoxin are the only two substances left which are claimed to represent the active ecbolic principle of ergot. Very careful investigations, however, contradict the justification for such a claim. Kobert lately has suggested that possibly the ecbolic principle does not always exist in secale in a preformed state. There is, however, nothing known concerning influences which may lead or prevent the formation of this particular substance in the plant. We are forced to assume that climatic conditions, atmospheric influences, the chemic constitution of the soil, the particular species of rye, and other unknown factors, account for the variability of ergot, especially in respect to the total amount of alkaloids it contains. According to Kraft, the ecbolic principle may be formed while the raw plant is subjected to the various chemic influences during the preparation of the extracts, etc. Barger and Dale indeed suggest that this principle is formed in the body through the contact of certain alkaloids with the blood. Bennecke very logically sums up: Our actual knowledge concerning the chemic constitution and action of the so-called ecbolic principle of ergot is nil.

Ergotoxin is an alkaloid, already mentioned in the preceding pages, which has been isolated by Barger and Carr in the Wellcome Physiologic Research Laboratory. It is the hydrate of Tanret's crystalline ergotin, and in all probability the active principles prepared by Kobert and Jacoby owe their activity to the presence in them of ergotoxin. Ergotoxin has been placed on the market by Burroughs, Wellcome & Co. under the name of "Ernutin." They make the following claims for this preparation: Ergotoxin in suitable doses produces the effects for which ergot is prescribed. The dose can be regulated with a degree of accuracy which has been impossible in the past when only extracts and similar preparations of the crude drug were available.

Careful clinical tests with ernutin have not as yet been reported. Bennecke experimented on animals and obtained results slightly at variance with those of Dale. He suggests that larger doses will have to be used. He cannot agree with Dale's claim that ergotoxin represents the only active principle of ergot, because Dale himself states that ergotoxin, even in large doses, if given by mouth, fails to show any effect. Bennecke concludes that at the present stage of our knowledge, for practical use, secale powder, collected and prepared in a proper manner, must be given preference over all the known extracts and preparations, because the undoubtedly existing great variability of the crude plant, of necessity, leads to a still greater variation in the constitution of those extracts and preparations.

Ergotinine citrate (4) is described as follows in the list of New and Non-Official Remedies published in the *Jl. of the Am. Med. Assoc.*:

According to the investigations of Barger and Dale, ergotinin has very slight physiologic activity when it enters the system unchanged, but it is liable to be converted to a certain extent into ergotoxin,, which possesses marked physiologic activity and appears to represent the pharmacologic action of ergot. The action of ergotinin, when given *per os*, or when injected hypodermically, is variable in intensity, but represents the action of ergot.

It is to be regretted that so far no reliable method of standardizing ergot preparations has been devised. One of the oldest methods is the production of gangrene in the cock's comb. But this method tells little more than that a certain specimen of ergot is active or not. The rise of blood-pressure following the intravenous injection of a standard dose is also suggested as an indication of activity. Such a method is neither accurate nor complete. Barger and Carr claim that preparations containing ergotoxin can be accurately assayed, by physiologic means, for their ergotoxin contents. This is rendered possible by observations of the characteristic action of the alkaloid on the terminal motor elements of the sympathetic nervous system. Still another method especially adapted to the study of the ecbolic action of ergot preparations is that devised by Kurdinowsky (5). He completely extirpated pregnant and non-pregnant uteri of animals and kept them physiologically alive by sending a constant stream of Ringer's fluid through the severed blood-vessels. He added to this liquid a freshly prepared infuse of secale, ext. secale cornutum of Bonjean and Wernich, ergot in hermetically closed tubes (Poehl, also Parke & Davis), Cornutin-Kobert (Merck), and sphacelinic acid (Merck), and although he used these drugs in high concentrations, he failed to obtain any effect upon the uterine muscle except with sphacelinic acid. Very different are results obtained by Kehrer (6) in experiments arranged in a manner very similar to that used by Kurdinowsky. He investigated 26 different preparations. Distinct uterine contractions could be obtained with all the ergotin preparations, but ergotin-Wernich, ergotin-Bonjean, ergotin-Denzel and secacornin-Roche, proved far superior. They usually produced a tetanic contraction of the isolated uterus, a point of special practical importance for the use of ergot preparations as a hemostatic in cases of uterine hemorrhages. Sclerotinic acid, ergotinin, cornutin and spasmotin were distinctly less active, while clavin and ergotinic acid proved absolutely inert. The most interesting fact has been ascertained by the investigations of Kehrer: That vasoconstriction and contraction of the uterine muscle, as the result of ergot influence, are two phenomena which occur absolutely independent from each other. Very good clinical results with the secacornin-Roche have been recorded by Schubert (7), and recently also by Thomson (8). But even such reports cannot change the fact that most of the ergot preparations on the market, and especially the fluid extracts, are extremely unreliable in their physiologic effect. Edmunds & Roth (9) tested eleven specimens of fluid extract of ergot, and found great variation in their physiologic efficiency, some of them being positively inactive, others very weak. Wood and Hofer (10) experimented with fluid extract of ergot obtained from representative manufacturers. Only two out of eleven tested samples were found to be active. In their opinion the fluid extract is not a stable preparation, but deteriorates very rapidly.

TUBERCULAR PERITONITIS IN CHILDHOOD.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

1. TUBERCULAR PERITONITIS IN THE NURSING.—Wiel and Pehu (*Arch. de Med. des Enf.*, June, 1909).
2. PATHOGENESIS OF TUBERCULAR INFECTION.—Roux and Jusséraud (*Arch. de Med. des Enf.*, February, 1909).
3. TUBERCULAR PERITONITIS.—Stone (*Bost. Med. & Surg. Jour.*, 1908, p. 705).
4. OPERATIVE AND CONSERVATIVE TREATMENT OF TUBERCULAR PERITONITIS.—Schmid (*Jahrbuch f. Kinderheilk.*, Vol. 66).
5. OPERATIVE AND CONSERVATIVE TREATMENT OF TUBERCULAR PERITONITIS.—Carpenter (*Brit. Jour. Chil. Dis.*, January, 1908).
6. MEDICAL TREATMENT OF TUBERCULAR PERITONITIS.—Bussi (*Abst. Brit. Jour. Chil. Dis.*, March, 1908).
7. TREATMENT OF TUBERCULAR PERITONITIS WITH MARMOREK'S SERUM.—Ganghofner (*Wiener Klin. Woch.*, 1909, No. 3).
8. TUBERCULAR PERITONITIS TREATED BY X-RAYS.—Allaria and Rovere (*Arch. de Med. des Enf.*, June, 1909).
9. TUBERCULAR APPENDICITIS COMPLICATING TUBERCULAR PERITONITIS.—Allan (*Brit. Jour. Chil. Dis.*, January, 1909).
10. ABDOMINAL TUBERCULOSIS IN GREAT BRITAIN AND UNITED STATES.—Bovaird (*Archives of Pediatrics*, June, 1909).

Wiel and Pehu have studied the interesting question of tubercular peritonitis in the nursing. Their communication includes the report of two cases and a detailed review of the literature of the subject. They have been able to collect about a hundred reported cases, and their conclusions are based upon this literature. The anatomic peculiarities of the disease in infancy are thus summed up:

(1) The caseous form is the most common—and caseous tubercles are found in most cases in the peritoneum.

(2) Concomitant tubercular lesions of the intestines themselves are very common.

(3) One characteristic feature is the presence of caseous tubercles in the genitalia, in both sexes. This is probably a contemporary infection, caused by the blood stream.

(4) It is the rule to find diffuse tubercular infiltrations in other organs, notably in the viscera.

Tubercular peritonitis in the nursing is thus characterized by the manifest predominance of caseous lesions, by the generalization of the lesions, and by the frequent coincidence of genital tuberculosis.

Clinical Symptoms and Signs: Among the more prominent clinical features are: Abdominal distention, vomiting, diarrhea and progressive emaciation. On palpation there is usually evident pain and tenderness on pressure. Widerhofer calls attention to the value of finding palpable

lymph glands in the abdomen—notably with reference to the retroperitoneal glands.

Vierordt notes that in female infants a purulent vaginal discharge is very common. In males, rectal examination shows infiltration about the prostate and seminal vesicles.

Most cases run without fever—except in the presence of complicating secondary infection.

Schroeter has shown that umbilical fistulae in infancy are commonly the result of tubercular peritonitis. The fistula may remain open just long enough to permit the abdomen to drain—or it may be converted into a faecal fistula as the result of inflammatory process with resulting tissue destruction.

Enlargement of the liver and spleen and of the peripheral lymph glands is frequent.

In general these infants present the picture of a pronounced and progressive athrepsia. The disease is almost always fatal, either as the result of marasmus, or of secondary infection, or of terminal meningitis. Recovery does, however, ensue in some cases, usually in the ascitic forms—which, as already noted—are comparatively rarer in infancy than in later life.

The diagnosis is often exceedingly difficult—and it to be based upon the associated signs and symptoms as above noted. The occurrence of abdominal symptoms, with the association of evident lesion of the genitalia, is to be regarded as exceedingly significant. [It would appear that in suspicious cases, a v. Pirquet or a Moro test might be of great diagnostic value.—Ed.] The treatment is practically the same as in older children. In the ascitic cases abdominal paracentesis is often of value—but laparotomy—as such—apparently offers no better outlook than purely conservative treatment.

Discussing the pathogenesis of tuberculosis in childhood, Roux and Jusséraud conclude—as a result of their experimentation and experience—that intestinal tuberculosis, either tubercular enteritis, or tubercular peritonitis, is a secondary tuberculosis due to ingestion of the bacilli (and proliferation) from the rhinopharynx. With reference to the frequency of tubercular peritonitis in childhood Stone's report is of some value. He reports 122 cases of tubercular peritonitis, 20 of which occurred in childhood. Bovaird has tabulated hospital reports in England and America, with reference to the frequency of abdominal tuberculosis. (He does not distinguish between tubercular enteritis and peritonitis, but undoubtedly the greater proportion of his cases must come in the former category.) He finds a very marked discrepancy between the figures for England and America. In England, of 47,030 hospital cases, 1,327 (3%) had abdominal tuberculosis; and 769 (1.6%) had tubercular meningitis. In America of 39,567 hospital cases, 82 (0.2 %) has abdominal tuberculosis, and 345 (0.9%) had tubercular meningitis. The figures seem to make it clear that, on the whole, tuberculosis is much less common in children in the United States than in Great Britain. The great discrepancy between the relative increase of abdominal tuberculosis in children in the two countries is also very striking.

With reference to the question of treatment of tubercular peritonitis in childhood, some interesting figures have recently been published.

Schmid has studied some cases, with special reference to the permanent results of operative and conservative treatment. He tabulates 41 cases of tubercular peritonitis in childhood.

There were 19 laparotomies of these:

- 11—57.8% remained well 3 years or over.
- 1— remained well less than two years.
- 1— unknown.
- 6—31.6% died.

There were 22 cases conservatively treated. Of these:

- 12—54.6% recovered permanently.
- 1— remained well less than two years.
- 1— unknown.
- 8—34.6% died.

Eleven of the operated, and 8 of the non-operated cases were in the prognostically good category of tubercular peritonitis. But the non-operative group had more cases of the severest type than did the operative group. No conclusions are drawn by the author, as to the definite advisability of operation. In a discussion, before the British Society for the Study of Disease in Children, as to the general prognosis of the disease, Carpenter reported 31 cases which he had seen and followed. Of these, 15 died, 10 recovered permanently and 6 were not definitely traced. Full details not given. Still called attention to the constant danger of implication of other organs in cases of fatal abdominal tuberculosis. The lungs are the most likely of all organs to be attacked. The infection in such cases probably occurs via the thoracic duct and the pulmonary artery.

Sutherland, discussing treatment, insisted on the value of open air treatment and rational diet. The part of drug treatment in this disease is very small. This is indeed the general consensus of opinion among even the warmest advocates of conservative treatment at the present time.

Bussi, who is a strong adherent of conservative treatment, advocates simple tapping of the abdomen, when there is ascites. He then paints the abdomen with an iodine guaiacol mixture, supplementing this by the subcutaneous injection of a solution of iodine 1 part, potassium iodide 10 parts, guaiacol 20 parts and glycerin 80 parts. In some cases he has given this mixture by mouth with very satisfactory results. He believes that iodine is of very great value in the treatment of this condition.

Ganghofner reports the result of his treatment of various forms of tuberculosis in childhood with Marmorek's serum. There were 32 cases in all, including 5 cases of tubercular peritonitis. No results were obtained in any of the cases that could be attributed to the serum per se. It would appear that the antitoxins could not be absorbed from the bowel in quantities sufficient to do any good. This is in accord with the experience of many other investigators. Allaria and Rovere treated severe cases of tubercular peritonitis in childhood with the x-rays. Fifteen minute treatments were given, repeated at daily or several day intervals. The authors are unwilling to claim any positive results from the treatment. Apparently this form of treatment should be reserved for the ascitic cases. [But it will be remembered that the ascitic cases offer the best outlook under any rational form of treatment.—ED.] Even in these cases it would appear difficult to say how much of the derived benefit was due specifically to the action of the rays. The treatment must still be regarded as absolutely experimental and is by no means to be recommended as routine procedure. Allan reports that in tubercular peritonitis in childhood tubercular appendicitis is not an uncommon complication. The treatment is necessarily operative, but the prognosis is generally very unfavorable.

TREATMENT OF RHEUMATISM.

A REVIEW OF RECENT LITERATURE.

By WILLIAM ENGELBACH, M. D.

1. THE TREATMENT OF ACUTE ARTICULAR RHEUMATISM.—Plehn (*Deut. med. Woch.*, 1908, LI., 2201).
2. THE EFFECTIVE TREATMENT OF ACUTE AND SUBACUTE RHEUMATISM.—Lees (*Brit. Med. Jour.*, 1909, I., 146).
3. SPIROSAL TREATMENT OF RHEUMATISM.—Gardemin (*Deut. med. Woch.*, 1907, No. 69).
4. (*Ibid.*)—Perl (*Med. Klin.*, 1908, No. 15).
5. (*Ibid.*)—Schonheim (*Budapesti Orvosi Ujsag*, 1907, No. 27).
6. (*Ibid.*)—Ruhemann (*Berl. Klin. Woch.*, 1908, No. 23).
7. (*Ibid.*)—Dengel (*Alig. Med. Centr. Ztg.*, 1908, No. 18).
8. THYROID MEDICAL IN CHRONIC ARTHRITIS.—Leopold Levi and Rothschild (*Bull. de l'Arcad. de Med.*, 1908, No. 10).

Plehn says that the success of the salicylate treatment of acute articular rheumatism depends on sufficient dosage. When so given, he thinks the action of the salicylic acid is as specific as the action of quinine in malaria or of mercury in syphilis. He gives one gram every two hours, so that the patient takes 6 grammes a day, suspending the medication at night. This is continued until the temperature has been normal for three days and all joint symptoms have disappeared. He then gives 4 grammes a day for a week. Three further days in bed without drugs are insisted upon before the patient is allowed to get up. The painful joints are dressed with dry cotton and supported on cushions. This method is applied to every case, no matter how mild it may seem, and he regards it as the minimum dosage necessary for the proper treatment. Women, as a rule, do not tolerate such doses, and he consequently reduces the dosage to 5 or even 3 grammes a day. As a rule, the dosage should correspond to 0.08 gram per kilogram of body weight. In 319 cases so treated, with the heart normal, valvular trouble developed in only two cases, and in these this method had not been carried out strictly. In 101 recurring cases of rheumatism, in which the first attack had been treated elsewhere, heart trouble developed in 36 cases. Plehn is convinced that this method of early, vigorous, and long-continued salicylate treatment saves the patient from complications on the part of the heart and pleura. He believes that salicylic acid in doses of 8 grammes a day, continues for long periods of time, has no toxic effect upon the heart. It can be given without bad results in chronic valvular disease and myocarditis. He says that existing acute or chronic nephritis was always favorably influenced by its treatment. He believes that baths and packs reinforce the action of the drugs, but never take their place. He suggests for the rare cases which resist the salicylate treatment either the intramuscular injection of quinine with antipyrin or the intravenous injection of colloidal silver.

Lees believes that rheumatic fever is a specific infectious disease, the manifestations of which differ widely in children and adults. He believes that in childhood the heart is always affected to a greater or less degree, but that the joints may be only slightly and often not at all affected. When it attacks adults, the most prominent manifestation is an arthritis. He attributes to the salicylates a specific action against the rheumatic microbe or poison. For this purpose the salicylates must be given in sufficiently large doses. He believes that practitioners are satisfied ordinarily with the cure of the more easily controlled manifestations,—the arthritis and the pyrexia. He deprecates this attitude and speaks for the more energetic use of the salicylates to ward off cardiac complications. The addition of double the amount of sodium bicarbonate to each dose of the salicylate will help to prevent the unpleasant symptoms which may prevent the use of a sufficient amount of sodium salicylate. The initial dose for an adult should be 15 grains given every two hours, from 6 a. m. to 10 p. m., or 150 grains daily. A child aged from seven to twelve years should receive 10 grains every two hours, or 100 grains daily; for a child younger than seven, 5 grains at a single dose, or 50 grains a day. The amount of the daily dosage should be increased each day, or every second day, until unpleasant symptoms are produced. These are deafness, tinnitus, vertigo, vomiting, etc. Drowsiness in children, an acetone odor to the breath, or acetone-uria, with slowing and deepening of the respirations, are danger symptoms. He points out that these symptoms may be entirely prevented by the relief of constipation and the use of sufficient sodium bicarbonate. The daily increase of the dosage may be from 2 to 5 grains in the individual dose. The amount needed for a child may be nearly as great as for an adult, for in a child the infection is more virulent and more often affects the endocardium. In a child, also, the drug is eliminated more quickly in the urine. In mildly acute and subacute cases a daily dose of 150 grains may be sufficient, but in many it is necessary to increase this to 200 and 250 grains a day, and in some severe cases to 350 and 400 grains. Chorea may require 250 to 400 grains daily.

Spirosal has recently been warmly recommended as an improvement on mesotan and other salicyl preparations for local applications. It is a thick fluid, without odor or color, soluble in alcohol. As Impens has pointed out, the drug is soluble in oils to the extent of about 17.9 per cent., or 20 per cent. if mixed with equal parts of rectified spirits. This solubility in oil enables it to penetrate the skin readily, while at the same time it is, of all the salicyl esters, the one which is most soluble in water; hence it not only penetrates the skin readily, but also is able to pass quickly into the blood and lymph. This is borne out by the evidence of Gardemin, who found that the urine gave the salicyl reaction within two and one-half hours of applying the drug to the skin. Other observers obtained the reaction in three hours, and Perl states that the reaction persists for ten to thirteen hours. Perl, Schonheim, Ruhemann, and Dengel all agree that the drug is not irritating to the skin, or followed by gastric irritation or ringing in the ears. Gardemin, out of fifteen cases, only noted two instances of cutaneous irritation with reddening of the skin and slight pain. Ruhemann, in one case, after the energetic application of several drachms, observed transient giddiness. The therapeutic effect of the drug is very marked in acute muscular rheumatism and in the acute exacerbations of chronic joint rheumatism, while it also proved useful in acute rheumatism and in gout.

Leopold Levi and Rothschild report favorably of the use of thyroid medication in thirty-seven cases of chronic rheumatism. The cases were observed for three years, and varied in the age from twelve to sixty-five years. Ten of the cases were chronic deforming rheumatism, and five had been bedridden for years. In nine cases there was a history of subacute exacerbations, ankylosis, deformity, and persistent pain. Of these, fourteen improved considerably as regards pain, use of joints, deformity, and articular deviation, while two were completely cured. The twenty other cases were instances of medium or more benign types of rheumatism, and eighteen of these were improved or cured. The results were most favorable in cases where the joint changes were not profound, where the lesions were restricted, the patients young, and the onset of the disease recent. The dose was one to three cachets daily, containing $1\frac{1}{2}$ gr. of dried thyroid powder, equivalent to $7\frac{1}{2}$ gr. of the fresh gland.

THE DIGESTION AND ASSIMILATION OF FATS.

A REVIEW OF RECENT LITERATURE.

By JESSE S. MYER, M. D.

1. THE DIGESTION OF FATS IN THE ANIMAL ORGANISM.—Levites (*Zeitschrift f. physiol. Chem.*, Bd. XLIX.-LIII.-LVII.).
2. THE EXTRACTION OF PANCREATIC SECRETION FROM THE STOMACH.—Lewinski (*Deutsche Med. Wochn.*, September 10, 1908).
3. DIAGNOSTIC AND EXPERIMENTAL OBSERVATIONS CONCERNING FAT DIGESTION IN THE GASTRO-INTESTINAL TRACT.—Umber (*Münch. Med Wochn.*, No. 31, 1906).
4. EXPERIMENTS ON THE ABSORPTION OF FAT FROM AN ISOLATED LOOP OF SMALL INTESTINE IN HEALTHY DOGS.—Plant (*The Am. Journ. of Physiology*, Vol. XXIII., No. 21, 1908).
5. ALIMENTARY LIPAEMIA.—Leva (*Berliner klin. Wochn.*, 1909, No. 21).
6. FAT SPLITTING FERMENT IN THE LYMPHOCYTES.—Bergel (*Münch. med. Wochn.*, January 12, 1909).

Considerable work has been done of late on the rather obscure subject of fat digestion. Many of these observations have been made upon animals and, perhaps, an equal number upon the human. These investigations have resulted in several interesting and, no doubt, useful facts. Levites working with dogs with stomach fistulæ comes to the following conclusions, in regard to the digestion and absorption of three fats, namely beef fat, butter and lard,—that in comparison with proteids and carbohydrates, fats remain quite long in the stomach,—that in the first hour of digestion fats pass very slowly and irregularly into the duodenum, but with increasing rapidity after this time. Beef fat remains a much less time in the stomach than the other two, and none of these fats are absorbed in the stomach. The absorption begins in the jejunum, and is practically ended at the cecum. Neutral fat cannot be absorbed except after splitting into fatty acid or its compounds, and the facility with which this is done depends much upon whether the fat is given in a finely divided state or not. The chemical change, in the stomach, is very slight in the first hours, when the acidity is high, but later when secretion ceases, and probably a regurgitation from the duodenum takes place the fat splitting is considerable. The author does not, therefore, agree with Vollhard and his pupils that there is a fat splitting ferment manufactured by the stomach, but believes that the fat digestion which takes place here is due to regurgitation of ferments from the small intestine. The work of Lewinski seems to add weight to the view of Levites on this point. By giving a patient 150 grams of olive oil and preventing the stomach from becoming more than slightly acid by means of magnesia usta, removing the stomach contents through a stomach tube after an hour, he was able to demonstrate the presence of trypsin in every case. He asserts moreover that the absence of trypsin in the stomach

contents after such procedure shows either pancreatic insufficiency or pyloric obstruction.

Umber makes the following statements: When the fat in the stool is as much as 45 per cent. of that ingested it speaks for simple shutting off of the bile. When more than 60 per cent. is found there is also interference with the pancreatic function. If more than 50 per cent. of fat escapes from a non-icteric patient there is probably pancreatic disturbance. When neither bile nor pancreatic juice reaches the intestine as much as 87 per cent. of fat is lost. There must be other fat splitting enzymes besides the one in the pancreatic juice. Although the fat absorption, which depends on the pancreas may be strongly altered, the fat splitting is not greatly affected until many parts of the digestive canal are diseased. The work of Plant partly substantiates and partly refutes the conclusions of Umber. This author, working on healthy dogs, isolated a piece of the small intestine measuring 55 to 75 cm. in length, beginning about 25 cm. below the pylorus, separating this loop from the rest of the intestine without interfering with its blood supply or mesenteric attachment. He sums up his work as follows: Bile salts greatly increase the absorption of fats from a mixture that contains free fatty acids or soap. They only slightly increase the absorption of neutral oil. Solutions of soap in the absence of other fat are absorbed from a loop of intestine in greater percentage than emulsified fats. This is also true of fatty acids dissolved by salts. Neutral oil can be absorbed without action of either bile or pancreatic juice from a loop of intestine, where both these secretions are excluded. Under such conditions the neutral oil becomes markedly acid in reaction.

Leva has recently tried by a more simple and shorter method to verify the results of Neisser and Braeuning, in regard to the fat content of the blood serum following the ingestion of fat. Leva, following the methods of Neumann, used the dark field mirror condensor with a moist fresh specimen of blood under a cover slip. Neumann has called attention to the fact that Hämöconien, or "blood dust," described by Müller, was composed of fat and varied in size from those visible with the ordinary illumination to the very smallest just visible with the dark field illumination, that these bodies were not present in the blood of individuals on a fat free diet, and that their time of appearance and number depend largely upon the ingestion of fat. Leva has verified these statements and added a few observations of his own. The larger the amount of fat ingested the sooner do the Hämöconien appear, the larger their number and the greater the number of large forms. The Hämöconien make their appearance about one hour after a full meal and only after 15 or 16 hours do they finally disappear. Their appearance in the blood is delayed in cases of poor stomach motility or pyloric stenosis. The absorbability of the rectum for oil was tested by this method. 200 ccm. of olive oil were injected and showed practically no increase in the Hämöconien. 250 grams of cream with five grams of pancreatin showed only a few Hämöconien, not nearly the amount caused by 5 grams of butter taken per os. Leva says that the manner in which the blood disposes of or digests the Hämöconien is yet to be settled. Strauss found lypolitic substances in the blood serum. Braeuning, on the contrary, could not demonstrate them. The recent work of Bergel may throw some light upon this question. He claims to have found a fat splitting ferment in the lymphocytes. If further investigation proves the correctness of this it will give added interest to the question of fat metabolism.

NEW METHODS IN HEMATOLOGY.

A SURVEY OF RECENT LITERATURE.

By ALBERT E. TAUSSIG, M. D.

1. A SATISFACTORY METHOD FOR STAINING BLOOD SMEARS.—Hayhurst (*Jour. A. M. A.*, April 3, 1909, No. 14).
2. CLINICAL OBSERVATIONS ON BLOOD STAINS.—Peebles and Harlow (*Jour. A. M. A.*, March 6, 1909, No. 10).
3. THE EXAMINATION OF HUMAN BLOOD STAINED WITH A HYPOTONIC SOLUTION OF METHYLENE BLUE.—Sebrazès (*Lav. e Riv. di Chim. e Micr. Clin.*, Vol. I., No. 5).
4. GRANULATED RED BLOOD CORPUSCLES.—Fiessinger and Abrami (*Rev. de Méd.*, 1909, No. 1).
5. A SIMPLE METHOD FOR FINDING BLOOD IN URINE.—Albarran and Heitz-Boyer (*Presse Méd.*, May 19, 1909, No. 40).
6. BLOOD TEST BY MEANS OF THE TURPENTINE-GUAIAC METHOD.—Dreyer (*Muench. med. Wochenschr.*, July 6, 1909, No. 27).
7. A SKIN REACTION IN CARCINOMA.—Elsberg (*Jour. A. M. A.*, March 27, 1909, No. 13).
8. DEMONSTRATION OF THE TRICHINELLA SPIRALIS IN THE CIRCULATING BLOOD IN MAN.—Herrick and Janeway (*Arch. Int. Med.*, April, 1909).

Blood Stains. In staining blood-films the various solutions of eosinate of methylene blue in methyl alcohol (Jenner's stain, Wright's, Tiedemann's, Harlow's, etc.) are so convenient, that for routine work they have displaced all others. One of the most useful of these is Harlow's stain, or Skelton's, as it is sometimes called. "This stain is of two parts, one a 1 per cent. solution of eosin, water soluble, in methyl alcohol, and the other a 1 per cent. solution of methylene blue in methyl alcohol. The smear is stained first for one minute with the eosin mixture and the stain poured or thrown off. Then the methylene blue solution is put on for one minute, after which it is washed in distilled water, dried and mounted as usual. In the Harlow stain the methylene blue is polychromed on the smear by the little eosin remaining on the glass, after most of it has been poured or thrown off. The stained smear has the same general appearance as the Wright stain, except that the reds have somewhat of a blue tint." Hayhurst has found that constantly good results can best be obtained by this method, if care is taken that little or none of the methyl alcohol evaporates during the process of staining. He uses three Syracuse flat-bottomed watch glasses, which may be piled one on the other. The eosin solution is poured into the bottom glass, upon this is placed a second one containing the methylene blue while the third one, empty, is placed on top as a cover. The dried spread is placed, face downward, into the eosin solution and the others put on top. After a minute it is taken out, the stain flicked off, and placed into the second glass and again covered. After another minute it is again removed, washed, dried and mounted.

Peebles and Harlow call attention to the instability, under ordinary

circumstances, of all of the methyl alcohol stains. This is due to the fact that methyl alcohol is of itself unstable. "In the presence of but little light or air, it is in part changed to formaldehyd, and this, with a bit of moisture is converted into formic acid. It makes some difference what methyl alcohol one uses. The 'absolute methyl alcohol, acetone-free,' is not so good for making up a staining solution as is the 'reagent methyl alcohol' to be had from Merck. Absolute methyl alcohol readily changes in part to formaldehyd and formic acid, even in the absence of any amount of light, air or moisture; whereas the 'reagent' alcohol is far more stable.

It has been the ordinary experience of every one who has had much blood work to do, that an old stain always stains too red; this, for the reason pointed out above, that the old staining mixture becomes acid. In the presence of a trace of acid the oxyphilic component of the stain is accentuated, while the avidity of the methylene blue is depressed and *vice versa*. Again, different bloods react differently to the same staining fluid under the very same technic. A normal blood, for instance, will stain very well with a certain staining solution, while a smear from pernicious anemia will not stain at all well, or it may be impossible to demonstrate the granules of the myelocytes in a case of myelogenous leukemia."

Good results can always be obtained if the proper reaction is produced by the addition, if necessary, of glacial acetic acid or of an alcoholic solution of potassium hydrate. In old stains the latter will usually be needed. Where the two stains are used separately, as in Harlow's method, the reaction of the methylene blue alone will have to be corrected. This reaction of the solutions is apparently of far greater importance in determining the red or blue color of the spread than is the relative proportion of eosin or methylene blue used. The decomposition of the alcohol can be prevented by keeping it in bottles rendered opaque by a coating of asphalt black. The ordinary dark brown bottles, in the writer's own experience, do not suffice to render their contents stable.

The so-called vital staining of blood-films is attracting much attention. A number of methods have been suggested, of which that of Sabrazès is typical. A small drop of blood is spread evenly, in the usual manner, upon a slide carefully cleaned with alcohol and ether. A small drop of a dilute solution (1 to 500) of methylene blue, medicinal pure, is placed upon a clean cover glass, which is then inverted upon the evenest portion of the blood spread. The latter, it will be seen, is not fixed. The stain spreads out promptly between slide and cover and the specimen is ready for examination with the oil immersion. The red corpuscles are barely stained, but stand out with clear outlines. The white cells, both lymphocytes and polynuclears, are readily recognizable. The neutrophil granules take a faint bluish tinge, the eosinophils are greenish and the mast-cell granules have a violet tinge, the nuclei of all these cells staining a more definite blue. Malarial parasites are readily recognized and so are the characteristic cells of leukemia. The blood platelets stain intensely and can readily be counted.

The most interesting features of blood stained in this manner are, however, the granulated erythrocytes (*hématies granuleuses*). These are red corpuscles that with ordinary stains show no abnormality but, by this method, are shown to contain tiny granules often connected by a fine net-work. They are sometimes found free in the blood and are then bound together by basophilic strands into a delicate reticulum. Normal blood contains a moderate number of these granulated cells, but in the anemias, and in certain intoxications, they are very abundant. Whether these

granules represent regenerative or degenerative changes is not yet clear. They seem to differ essentially from the granules in the so-called "stipple cells." The writer of this abstract has seen a number of cases, that clinically presented the picture of anemia, with a moderate reduction of hemoglobin, in which the stained blood, after fixation, showed no abnormality, but in which spreads treated by this method were found to be full of red cells with basophil granulations. The method can be recommended as a simple and satisfactory one for routine office work. Its disadvantages are that the spread must be stained before it is more than a few hours old, and that it must be examined before the film of stain dries out.

Fiessinger and Abrami have obtained similar results with Pappenheim's reagent (pyronin and methylene green), Unna's polychrome methylene blue diluted four times or a mixture of methylene azur solution with ten times its volume of physiologic salt solution.

Blood Tests. The usual tests for blood in urine are reasonably satisfactory, but Albarran and Heitz-Boyer believe that the following method offers definite advantages. The reagent is a decolorized alkaline solution of phenolphthalein. Two grams of phenolphthalein and 20 of potassium carbonate are dissolved in 100 c.c. distilled water. Ten grams of powdered zinc are added and the mixture boiled, with constant shaking, until the fluid, at first red, is decolorized. It is then filtered and keeps for a long time in a well-stoppered bottle. In making the test two parts of urine are mixed with one of the reagent, and a few drops of hydrogen peroxide are added. If blood be present the urine turns bright red, the blood enabling the peroxide to re-oxidize the phenolphthalein which had been reduced by the zinc. The intensity of the red and the rapidity with which it appears indicate roughly the amount of blood present. The test is a delicate one, being positive if blood is present in the proportion of 1 to 100,000 of urine, that is in amounts in which the detection of red blood corpuscles by the microscope might be difficult. The reaction is said not to be influenced by the acidity or alkalinity of the urine, by the presence of pus, albumen, sugar, acetone, indican, bile, urates, chloroform, thymol, etc., nor by any drugs. In this respect it is apparently superior to the guaiac tests.

Dreyer describes a modification of the guaiac test for blood which seems to be superior in some ways to the methods hitherto described. The stool or the stomach contents are treated in the usual manner with seven cubic centimeters of ether and a little glacial acetic acid. To the ethereal extract a little powdered guaiac is added, as recommended by Boas. The mixture is then poured over a piece of white filter paper that has been dipped into ozonized oil of turpentine. If blood be present a blue color results immediately; if much blood be present, in 10 or 15 minutes in the presence of the faintest detectable traces. One advantage of the method is that the different portions of the ether are mixed with the powdered guaiac in different proportions. While some drops of the extract, as it is poured over the turpentine paper, will contain too much or too little guaiac to make the test of the greatest possible delicacy, others will contain the most advantageous possible proportion. It is for this reason that the blue color, in the presence of very faint traces of blood, will appear only at isolated spots on the paper. Care must be taken that the fingers are allowed to touch neither the reagents nor that part of the filter paper that is to be saturated with turpentine, since traces of sweat will of themselves give a positive reaction.

Carcinoma. Numerous investigators have shown that if the blood serum of a patient suffering from carcinoma be mixed with normal human

red blood cells, hemolysis occurs. The reaction takes place in from 50 to 80 per cent. of cases of malignant disease. It occurred to Elsberg that if washed red blood corpuscles from a healthy human being were injected under the skin of a cancer patient hemolysis might take place there as well as in the test tube, and a local reaction be produced. He found that the hypodermic injection of laked blood always produced a local inflammatory reaction, whereas the injection of uninjured red corpuscles ordinarily did not. Patients whose serum had hemolytic power might be expected to lake the red corpuscles after their injection. An inflammatory reaction would thus result. "The technic employed was a very simple one. Under aseptic precautions, and with a syringe boiled in 0.85 per cent. salt solution, blood was aspirated from the median basilic vein of a normal individual (preferably a child), every possible precaution being taken to ascertain that the individual was healthy and free from hereditary or acquired disease. The blood was defibrinated and the cells washed four times in normal saline solution, care being taken that the washings and centrifugating was thoroughly done. A 20 per cent. emulsion of the red cells in normal saline solution was made and kept in the ice-box for twenty-four to forty-eight hours before it was used. Five minims of this twenty-four to forty-eight-hour old suspension of washed red blood cells were subcutaneously injected into the anterior surface of the forearm of the patient by means of a hypodermic syringe sterilized in normal salt solution. In the patients in whom a 'reaction' was obtained the following changes were noted in the skin at the site of the injection: Three to twelve hours after the injection the affected area was slightly raised and slightly tender; it had a more or less well-defined margin; it measured 2 to 4 centimeters, and it was of a somewhat dusky red color. The changes in the skin reached their maximum within one to two hours, and the red area then began to fade, rapidly or slowly. Eight to twenty-four hours after the injection the skin lesion had either entirely disappeared, or, more often, a brownish, bluish or lemon-yellow discoloration remained, which persisted for a number of days.

"In the patients who did not show this reaction there was either nothing to be seen at the site of the injection excepting the needle puncture, or a brownish discoloration of the skin, or a bluish discoloration, as is often seen after a hypodermic injection."

The test was tried with 20 cases of cancer, all of whom reacted positively. Of four cases of sarcoma, three reacted positively. In over 100 non-cancerous individuals, all but three failed to react. If further experience with this method confirms Elsberg's results, a new and valuable diagnostic method will be at our disposal.

Trichinosis. It has long been known, from animal experiment, that in trichinosis the embryos enter not only the lymphatic spaces, but also the blood current. Hitherto, however, they have not been found in the circulating blood in man. Recently, however, Herrick and Janeway have found the parasite in the blood in a case of human trichiniasis. The blood was obtained by means of a syringe, from a vein at the bend of the elbow, was laked by means of 3 per cent. acetic acid, centrifugated and the sediment examined for embryos. In three cases of trichiniasis they failed to find the parasites in two, but found them readily in the third. It would seem, then, that a negative result has no definite significance, whereas the finding of the embryos settles the diagnosis. At all events a blood examination should precede the much more serious procedure of excising or harpooning a piece of muscle for microscopic examination.

BISMUTH EMULSIONS.

A REVIEW OF THEIR TOXICITY FROM A RADIOGRAPHIC AND THERAPEUTIC
STANDPOINT.

By EDWARD HOLMAN SKINNER, M. D., Kansas City, Mo.

1. ELECTRO-THERAPEUTICS AND THE ROENTGEN RAYS.—Kassabian.
2. ROENTGENOGRAPHY IN DISEASES OF STOMACH AND INTESTINES.—Hulst (*Fan. Am. Roentgen Ray Society*, 1908).
3. DIE RADIOLOGISCHE DIAGNOSTIK DER INTRA- UND EXTRAVENTRIKULÄREN TUMOREN.—Monograph by G. Holzknecht and Jonas, 1908.
4. A STUDY OF CONSTIPATION BY MEANS OF THE X-RAYS.—Hertz (*Archives of Roentgen Ray*, June, 1908).
5. ROENTGEN RAY EXAMINATION OF DIGESTIVE TRACT.—Groedel (*Archives of the Roentgen Ray*, October, 1907).
6. TOXIC EFFECTS FROM BISMUTH SUBNITRATE.—Emil G. Beck (*J. A. M. A.*, Vol. LII., No. 1).
7. BISMUTH POISONING.—David and Kauffman (*J. A. M. A.*, Vol. LII., No. 13).
8. DIAGNOSIS OF OESOPHAGEAL STRICTURE.—Pirie (*Archives of Roentgen Ray*, July, 1908).
9. Pancoast (*U. of P. Bulletin*, August, 1906).
10. BISMUTH POISONING AND A HARMLESS SUBSTITUTE FOR BISMUTH IN X-RAY WORK.—Lewin (*Münch. med. Wochensch.*, March 30, 1909).

The more general use of bismuth emulsions for radiologic and therapeutic purposes, and the report of a few complications following the use of the bismuth subnitrate salt, has aroused an unwarranted amount of discussion by those in the profession unfamiliar with its use. A study of the literature has brought forth much of interest.

The use of bismuth subnitrate, either mixed with food or suspended in water or in capsules, was introduced by Roux and Balthazard in 1896. (Kassabian). They used over an ounce to the pint of emulsion. Pancoast reports on 40 cases where two ounces of bismuth subnitrate to the pint of acacia mixture was used. The bulk varied from 6 to 32 ounces. In many of his cases as much as four ounces of the subnitrate was used without any unpleasant results. However, six cases showed toxic symptoms after this amount had not been removed after its use, radiographically. Sailer, at the same time, reported symptoms following the use of the subnitrate, with cyanosis, dyspnoea, nausea, etc. He excluded antimony and arsenical decomposition of the subnitrate. He thought that the x-ray peculiarly affected the trypsin, causing a disintegration of the subnitrate. Hulst administered one ounce of the subnitrate in over 30 cases without any ill effects. Holzknecht administered the subnitrate in several hundred cases as a basis for his exhaustive articles on stomach and intestinal physiology and a study of pathological conditions in the

alimentary tract, and there is the absolute absence of any notation regarding any deleterious effects of subnitrate of bismuth.

Groedel, in a discussion of the propriety of the use of bismuth subnitrate, cites the large doses given by Rieder and Holzknacht and the Russman treatment of gastric ulcer in which from 10 to 20 grams of the subnitrate were given daily. Groedel has never met with any bad results in his practice. He believes that the vomiting can usually be attributed to some independent accidental cause. He asserts that the bismuth remains unaltered by the acid gastric juice or by the alkaline intestinal secretions; that the bismuth passes into the feces mostly unaltered excepting that some of the crystals are coated with black oxide of bismuth. It may be doubted if the bismuth is entirely innocuous to children, to whom in all events, it should be given in minimal doses.

Beck has reviewed the reports of toxic effects from bismuth subnitrate, where it has been used in salves for applications to burns and wounds and also for radiologic and therapeutic injection. Several reports of poisoning from its application to wounds are interesting but the toxic effects immediately receded upon curettement and cleansing of the wound.

Beck repeats that the large daily doses of bismuth administered by Muhlig and Russman, without toxicity, made the use of large amounts for radiologic and therapeutic purposes justifiable. The first reports of toxicity in this field were by Worden and Pancoast and in these two cases in which 60 and 120 grams had been used and bismuth poisoning resulted, there was complete recovery in both. Bennecke and Hoffman reported the first fatal case of an infant, three weeks old, suffering from enteritis, where 3 grams were used to diagnose a pyloric stenosis. In 12 hours there was cyanosis and 3 hours later the infant died. Methemoglobinemia was present, and bismuth was found in the liver and bowels and in the blood. Boehme reports one fatal case in a child that suggested death by nitrite poisoning. Experiments proved this to be the fact. Altogether five cases of nitrite poisoning have been reported with two deaths. It is likely that the bismuth subnitrate ingested, always causes a liberation of small quantities of the nitrites, which are either absorbed and, owing to the small amount, cause no toxic symptoms, or changed in the intestine into ammonia or nitrogen. Reasoning further on this basis, there would be more nitrites liberated, the more subnitrates administered. Alcohols and glycerins seem to accelerate the formation of nitrites, therefore they should not be exhibited during the administration of the subnitrite. Beck states further that the liberation of the nitrites from bacterial action is more noticeable in the large intestine, and further that in the fatal cases thus far reported, all have suffered with some intestinal disturbance, which might have been potent in promoting putrefactive changes and more rapid bacterial action on the subnitrate. Beck makes a preliminary report on his extensive use of the bismuth paste for injection of sinuses and states that there is possible an absorption of the paste, the exact manner of which has not been successfully determined. Beck has never had a case display toxic symptoms similar to nitrite poisoning. Some of his cases have had a slight lividity of the mucous membranes and skin and a bluish border at the margin of the gums, with ulceration of the mouth in one case. These toxic symptoms have all been relieved upon the withdrawal of the emulsion from the sinus by means of a suction pump and a flushing with olive oil. Beck records at length one case that did not present typical symptoms of nitrite poisoning, but there was the presence of metallic

bismuth in the tissues without any indication of severe destructive changes however. It is doubtful if this case can be recorded as a death from bismuth poisoning, as the interstitial nephritis which had been present for some years and an abscess formation at the wrist, would more clearly point to the cause of death. The renal tissue was free from deposition of bismuth. Beck concludes as follows: 1. Bismuth subnitrate administered by the stomach in small doses is harmless. 2. In the presence of certain bacteria, or the faeces of children, bismuth subnitrate will liberate the nitrites, which will be absorbed by the intestines and eliminated by the kidneys; and, if the production is faster than the elimination, methamoglobinemia will result. 3. In larger doses per os, bismuth subnitrate is liable to produce an acute nitrite poisoning, characterized by the cyanosis, collapse, methamoglobinemia, and may terminate fatally. 4. Rectal injections of bismuth subnitrate may cause nitrite poisoning much quicker and more severe than when exhibited per os. 5. Children are more susceptible. 6. Persons suffering from intestinal putrefaction are more susceptible. 7. After the injection of large quantities of bismuth paste into suppurating sinuses, mild symptoms of nitrite poisoning may appear. 8. The bismuth injected into these sinuses and encapsulated will be gradually absorbed and may be found in the liver, spleen and intestines. 9. Characteristic symptoms of black borders of the gums, ulcerations of mucous membranes, diarrhea, desquamation nephritis, may appear several weeks following the injection of the paste. 10. The acute nitrite poisoning is to be regarded as a distinctly separate affection from the more chronic bismuth absorption. 11. Radiographers should employ some other preparation of bismuth, instead of the nitrate, and refrain from injections of subnitrate into the bowels, especially if intestinal putrefaction is present.

David and Kaufman report on two cases of poisoning from bismuth subnitrate, where it had been used as a paste for injection. Neither of the cases presented nitrite symptoms, the toxic effects being attributed entirely to the bismuth constituent. The pathological report is not attached to the report, without which there is little of interest to report.

Hertz, in an endeavor to find a substitute for the subnitrate, experimented with the subcarbonate, but found that when the subcarbonate came in contact with the gastric juice there was a liberation of free HNO_2 in the formation of bismuth oxychloride. Hence there was no alteration of the acidity of the gastric juice when small amounts of the subcarbonate were exhibited. When a large amount of the subcarbonate is used there is a reversal of this condition and the HCl is neutralized, thus failing to afford a study of the emptying rate of the stomach. He therefore now uses bismuth oxychloride. This salt is inert in the stomach and is not influenced in the intestines. There is no constipation following its use.

Lewin, in an endeavor to discard the bismuth salts, has experimented with various opaque substances. He has found that the oxide of iron in a mixture of chocolate or potatoes, produces no ill effects. He also claims to obtain better radiographic negatives with the oxide of iron.

CORRESPONDENCE.

PARIS LETTER.

By AUGUSTE A. HOUSQUAINS, M. D.

THE RHYTHM OF DIURESIS AND ITS COMPLICATIONS IN HEPATIC DISEASE.

With the healthy subject, ingesting daily a fixed quantity of liquids, the elimination of urine is quite a uniform matter; nevertheless, at times, elimination is subject to variations which, moreover, may be somewhat accentuated. These variations manifest themselves in clearly outlined oscillations, perfectly visible on the curve of normal diuresis. The results made public by authors who have thoroughly studied this question, furnish data that are remarkably unvarying. Professor Roger, who is familiar with this question, remarks that we should recognize in these physiological oscillations, a particular case of the general law that no movement in nature is uniform; that all phenomena which declare themselves unroll according to a more or less regular, oscillatory curve. Nutrition submits to this law, and urinary secretion which is intimately connected with it necessarily presents a series of modifications in keeping with the variations constantly resulting from the activity brought about by nutritive changes.

The rhythm in diuresis is disturbed in the course of various pathological conditions, notably in renal cardio-vascular affections, nervous affections, and in the disturbances of medicamental origin. Suffice it to say that the necessity of studying the daily curve in diuresis cannot be gainsaid.

Professor Gilbert and his pupil, M. Lippmann, are specially interested in finding out what are the disturbances in diuresis in subjects affected with hepatic derangements. "The rhythmic movement in urinary elimination," according to them, "is frequently disturbed and even completely obliterated in a large number of cases of hepatic disease. This results from two conditions which are directly opposite. At times the very manifest exaggeration in the oscillations of the urinary curve gives to the latter an irregular appearance, fantastic and truly ataxic; and, on the other hand, all undulatory movement may disappear, due to a daily decrease in the urinary elimination,—a decrease remarkably fixed; whereupon the tracings show daily reductions in the curve until a straight line is evolved.

MM. Gilbert and Lippmann have named the exaggerations in the daily variations in the urinary elimination "anisuria." Since 1906, when their first observations were made, they have added many others which are effecting a deeper study of anisuria. Let us say at once that as a result of the study of this non-equilibrium in diuresis, a new phase has become apparent—namely, the uniformity and fixity of the urinary decrease,

for which the same authors have proposed the name "isuria." Isuria and anisuria are therefore the two primordial disturbances that one may observe in the daily rhythm of diuresis.

What are the principal modalities? What is the semiological value of anisuria? Instead of the short and alternating oscillations characteristic of the normal curve in urinary elimination, the anisurical tracings show as broken lines, indicating daily digressions, abrupt and considerable. In certain subjects one may see the rate of increase in diuresis pass from 1,000 grms. to 3,500 grms. and then re-descend at once to 1,500 grms. before making a fresh ascension to 4,000 grms. It can readily be seen that the observations thus collected are of value only if the causes are carefully eliminated; to achieve this, a fixed regimen for the sick, of liquids and solid food, should be invoked. The urine is collected each day at the same hour and its quantity noted. This examination should be done in a room of equable temperature.

From the numerous curves thus collected, MM. Gilbert and Lippmann have been able to evolve certain clinical types, slightly schematic, without doubt, but nevertheless characteristic, things attested by the published results of their observations. Anisuria represents the exaggeration of the oscillatory movement of the normal curve: the vertical height of the oscillations indicating a deviation from the normal quantity (1,500 grms.) and the horizontal length illustrating the duration estimated by days.

One is justified in stating that sometimes there are incessant and daily variations; sometimes variations which arrive at maximum phases, then at minimum phases, each lasting from two to three days; sometimes the variations are more extended yet, showing in the form of successive cycles, ranging each time from the highest to the lowest phase in eight, ten or fifteen days. So perfectly is this done that the various tracings thus obtained recall in a manner the thermic curve of intermittent fever of the quotidian, tertian, quartan or continuous type.

As regards the quantity of urine eliminated in the course of these diverse oscillations, anisuria may be accompanied by polyuria, either appearing with normal diuresis, or finally coexisting with oliguria, the latter being very rare. MM. Gilbert and Lippmann have observed that in those affected with cirrhosis, it is unusual to observe anisuria and oliguria at the same time. From the time diuresis diminishes in a notable fashion, not only does anisuria disappear, but the normal undulatory movements also efface themselves totally, the tracings becoming equal. Isuria now obtains. Differing from anisuria, which at times is a concomitant of polyuria, of normal diuresis and oliguria, isuria never or hardly ever occurs except in oliguria.

Anisuria and isuria are then two opposite symptoms in complete contrast. If the first represents an exaggerated and immoderate increase in the physiological disposition of the urinary curves, the second indicates so extreme an attenuation of the normal contours, that in typical cases they disappear altogether. In studying anisuria in hepatic cirrhosis, we find only rarely anisuria associated with oliguria. When the affection arrives at this period, isuria obtains, anisuria completely disappearing. In the evolution of hepatic cirrhosis, anisuria is an early symptom; it is indicative of the presence of a profound circulatory trouble engendered by a hepatic lesion. Once present it continues more or less; then two eventualities may happen: either the curve changes to the regular rhythm, or, as often happens, the general state aggravates the degree of diminished diuresis, leading little by little to oliguria and its concomitant isuria. This last symptom appears then considerably later than anisuria, and its

significance is graver; at least when it is persistent and manifests itself simultaneously with oliguria.

The examination of the watery part of the urine shows that the increase in its volume corresponds to a rapid lowering of its specific gravity. Concentration is in inverse ratio to the volume of urine. The urea and chlorides vary but little in connection with the extreme irregularities in the volume of water emitted.

By way of conclusion it should be clearly stated that the examination of the urinary curve in hepatic derangements, especially in cirrhosis, reveals then the existence of two new symptoms: anisuria and isuria. To constitute their presence is easy enough; on the contrary, what is difficult is to offer a satisfactory explanation. One should ascertain, above all, in what way the hepatic lesion affects the renal function. Degenerative renal changes of hepatic origin have often been recognized; they intervene not seldom in these special cases; but preponderance must be given to disturbances of a mechanical and circulatory kind, since we know the important place occupied in hepatic pathology by hypertension of the portal vein and, secondarily, by sub-hepatic hypotention,—disturbances which react on the gastro-intestinal tract and interfere with absorption. Hence it is relatively easy to understand the important disorders which bring about the evolution of cirrhosis in the hepatic parenchyma and their reverberation on the circulatory mechanism.

August 10.

OBITER DICTA FROM FOREIGN JOURNALS.

THE IMPORTANCE OF VISION—THE EDUCATION OF THE VISUAL SENSE.

Recently the *Revue psychologique* printed in its columns an interesting article on the sense of sight in its relation to intelligence, attention and the æsthetic sense. Statistics, according to the writer's opinion, undoubtedly show the importance of vision as a factor in the development of the intelligence. Among the backward children at Carlsruhe, Doll showed that only 33 per cent. had normal vision, whereas among the children in the other schools 69 per cent. had normal vision. Gelpke had analogous results after examining backward children at Carlsruhe; and among 570 idiotic children at the Mosbach Institute he found only 27.5 per cent. with normal sight. Here it would be well to put the question, whether a visual anomaly is the cause of backwardness, or the insufficiency in cerebral development the reason for an insufficient sensorial development? The observations, according to Gelpke, would show that it is not arrest in the cerebral development that causes visual disturbances, for according to this acute observer, among idiotic children the percentage of disturbed vision was 43, among imbeciles 56, and among backward children 83. In fact, the idiots most afflicted from a cerebral standpoint show a smaller percentage of ocular disturbances than imbeciles; and imbeciles a smaller percentage than backward children. Therefore we should conclude that defective vision is an important cause of mental backwardness.

When the blind achieve an elevated degree of intelligence, it is invariably due to the education of the other senses taking the place of the absent visual sense. Often the educated blind fare better than the backward, inasmuch as the care bestowed upon them is of a personal and intimate nature, while the backward are placed in the same schools with normal children and do not receive the education to which they are entitled.

In the ordinary conditions of life, myopia does not appear to exercise any influence on the intelligence, at least in individual cases which have been examined. But the probabilities are that were we to make numerous examinations of intelligent and slightly intelligent children, of the same race and same age, and belonging to the same social status, we would arrive at conclusions that would show us that the children with the greatest intelligence are gifted with the greatest visual acuity. The intelligent child, even when he is myopic, understands how to appreciate with the greatest possible profit the things that he sees. Nevertheless, myopia is a disadvantage, an obstacle; and other things being equal, a child gifted with good visual acuity will be in a more advantageous condition for development. It may even happen that a child slightly intelligent and myopic, will experience the impossibility of surmounting the difficulties of a sensorial education; in short, his intelligence will grow darker and darker.

The education of the sight, similar to all sensorial education, is not a matter of physiology but of psychology. It is not sensorial acuity which

is improved thereby, but the perception. What one commonly calls education of the senses is in reality education by the senses. To see a light is to be conscious of it; to believe that one sees an object with all its outlines is to perceive. The education of the senses is the same as the education of perception. The senses perceive only with the help of the intelligence, which alone interprets and coördinates the information given. The permanent control which the intelligence exercises on the evidence given by the senses is the essential condition to further their education. What is necessary is to augment by proper exercise the justness and delicacy of the visual perceptions, so that their essential principles will be in accord with light and shadow, and the colors. Children should be taught exactly how to distinguish between colors and all their shades, how to recognize the intensity of illumination, the distance of objects, their form, etc. The first principles of æsthetic education are acquired in this way. The Froebel methods have precisely this object, since they develop the visual perceptions by the execution of designs in colors, folding, cutting out of colored papers, weaving by means of bands of paper, etc., etc. In habituating the child to explore space by means of sight, there is developed in him visual perception of space as well as ideas of perspective.

Each sensation has three attributes: intensity, quality and tonality. Intensity coincides with the strength of the sensation. Quality is the differential manner by which the sensorial organs register a modification. Thus sight gives the perception of diverse colors, form, extent of visible objects; hearing all the varieties of sound. Tonality coincides with pleasure or with pain. The quality of the sensation constitutes its perception, the other as sentiment. Perception, then, when it is developed, highest degree of development two distinct phenomena: one is known as perception, the other as sentiment. Perception then, when it is developed, shows varied manifestations of knowledge and intelligence.

Sensation is therefore a primitive phenomenon, acquiring through evolution and differentiation, all the other developed psychic qualities. This can be best illustrated by the method advocated by Sergi:

Excitation—Psychic Force.

Sensation.

Intensity.

Quality.

Perception.

Tonality.

Sentiment.

The psychological principles should be recognized by all educators. We have seen what bearing, sensations have on the intellectual development. At the same time what is of the greatest importance is to remember the dangers to which sensorial education is exposed when it is premature or badly directed.

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EDITORIAL.

THE EQUALIZATION OF PHYSICAL AND MENTAL EDUCATION.

The realization of the good that would accrue to mankind from an education based on the very sane idea of a step by step development, as regards both mind and body, is not of so recent date that anything approaching undue excitement need affect us. As far back as the earliest centuries of our era, there was much said and written on the subject of a simultaneous physical and intellectual education; and the term "Galenism," derived from the Greek physician's work, "De Usu Partium Corporis Humani," was at that time something to conjure with, and even retained until the eighteenth century enough glamor to give sustenance to the weakening efforts of the partisans of a wise creed. But with the advent of the eighteenth century, it was not long before it fell to a disgracefully low estate, before the sweep of an onslaught from opponents who derived no inconsiderable strength from the frenzied enthusiasm for intellectual adornment which pervaded the best ranks of society. A hiatus in respect of a physical development of equal proportions with what was thought a normal mental evolution, persisted nigh unto one hundred years; and though to-day some regret might be expressed for a neglect that certainly was detrimental to the physical prowess of nations, we yet cannot abstain from a congratulatory mood, when studying the forced educational conditions of this epoch-making period in history. For if the concentration which was lavished on the mind had been directed into the channel of physical culture, few would have been able to withstand the strain; and a multitude of physical wrecks would have fathered a generation, whose physical defects would have been so great that, even after the lapse of many years, there would have been a lower physical status among their descendants, than was evidenced by the discouraging signs which smote the intelligence of such men as Johann Heinrich Pestalozzi and Peter Henrik Ling at the beginning of the nineteenth century.

Truth to say, the heritage which is ours to view alternately with slight hope or deep commiseration, is discouraging enough at times to awaken a deep interest in this vital subject; nevertheless, it would be wrong to hark back to preceding centuries to lessen the blame which now rests upon us; for though, as we have already remarked, the eighteenth century made light of the development of the body, the nineteenth,—despite the red-letter days, on account of the labors of the aforementioned two men who brought home to the various peoples of receptive intelligence the great news of the need of greater education of the body,—has really but few encouraging lessons to offer, to illustrate that even when many shafts are driven home, human intelligence is eager to rectify what was left undone in the past. Despite this laxity of duty, so inimical to the desired improvement in the human race, the present century cannot be thought a like laggard; for to judge only by what some of the foreign literary* and medical** journals are printing, the matter of physical education has taken a new lease of life, with all the indications of an agitation that will bear fruit. Nevertheless, we should be wary as to favorable predictions, since every century, in its infancy, makes much of enthusiasm in connection with all sorts of problems, only to become lukewarm as its judgment grows more sedate and its voice less penetrating by reason of a passive maturity. Even the last century started out in the first decade with clear and somewhat shrill sounds, to the effect that Peter Henrik Ling was the greatest advocator of the advantages of the close alliance between body and mind; though, in no jesting sense, it may be stated, that towards its close the sounds had dwindled into a whisper, and physical decadence, if not in Sweden, at least throughout the rest of the world, went merrily on to its furthest goal.

While every movement that has the betterment of the human race for its object, is sure to attract the wild-eyed enthusiasts who by a strenuousness most deplorable do it more harm than good, there is in this instance such ample room for the widest play of a calm and measured sanity, that no fear need be entertained that the aforesaid enthusiasts will outnumber the moderates. Whether or not frenetic partisans are to blame, the fact remains that there are many pages in the history of the human family, which show that physical development has been thought, if not a negligible quantity, at least one of secondary importance. To raise it upon the pedestal which to-day supports only the mind, thus making it of equal worth and value,—and, be it said, of no detriment to any of the mental graces,—is the hope of the believers in the advantages

*The Eternal Union. London *Outlook*, May 8th, 1909.

**De L'Education Physique. Par le général Fr. Canonge, Docteur en médecine. *Gazette des Hopitaux*, July 13th, 27th, Aug. 12th, 17th, 19th, and Sept. 2nd, 1909.

of a proper physical development; for out of the combination must arise a better illustration of manhood than obtains to-day. It may be well for the ignorant to decry the Greeks for their over-indulgence in outdoor sports, and charge them with neglect of the proper cultivation of their mental faculties; but the student, who has drunk deep of the history of these people, at the time of which we speak, knows better than to bring against them so ridiculous an indictment. We cite this instance in history, because too many educators are prone to see, in physical exercises, a temptation on the part of the student to develop them at the expense of the mind. To all right-thinking physicians this must appear, even at first sight, as a contention that has small worth; for to them it is a matter of great moment that the body should reap benefits similar to those hitherto enjoyed only by the mind. It has been suggested in certain quarters that too great an indulgence in the development of the physique may defeat, on account of a weakening of the physical powers, the object in view; and though this does happen where the desire for improvement deteriorates into an insensate ambition, the instances are not so numerous that obstacles should be placed in the only avenue that leads to health. A mind, no matter how high a degree of culture it has attained, cannot be a healthy one if it lacks the stamina which come to it from a close association with a healthy body.

There is one phase, however, of this vital question, which is open to contention. When are we in the right condition to benefit by exercise? and are tired nerves best restored to their virile state by rest instead of exercise? Professor Münsterberg* has recently inveighed against all exercise for the American people, on the ground that we are, so to speak, a bundle of nerves, and that complete rest should be the tenet of our lives, instead of exercise which he orders for a hardier race of men. The inference to be drawn from his article is that while other nations have the anatomical nerves, we have the pathological ones; and that, if we continue in our careless and thoughtless ways, pathology will make sad havoc of us before long, what with the added folly of all those new-fangled ideas of physical education, which some American educators are promulgating for the benefit of the child and the adolescent.

Having studied our social and physical conditions through German spectacles, and being possessed of Teutonic nicety when the critical spirit seizes him, we cannot but hearken to Professor Münsterberg's writing on the wall; but even though we do admit, after much wrangling, that our nerves are not of the healthiest, we are not justified in belittling the great advantages arising from a physical education. For if our nerves are as unhealthy as he asseverates, there must be a very good reason for

*"Nerves." *Metropolitan Magazine* for August.

this untoward state; and despite our business propensities—a bugbear which always looms exaggeratedly large before a foreigner's eyes, and is invariably held accountable for our physical degeneracy—a saner conception of what education in its broadest sense should stand for, would do much to combat all the inroads of devastation, which are now supposed to beset us when we enter into the thick of the fight for existence. Solicitude for the growing child as regards the proper physical basis, so that in later years there shall be a bulwark of resistance to counteract the buffets incidental to modern life, would soon show that the articles, which iterate the grave mistakes of our corybantic endeavors in the business world, are misleading, since they merely skim the surface of a condition that is faulty because, too long, there has been a divorcement between the intellectual and physical in our life of to-day.

AS TO THE DIAGNOSIS OF GENIUS.

The most perplexing problem which continually assails the modern mind is the one which has, among its many baffling characteristics, the tantalizing intricacy that muddles many an unbiased critic, when attempting to differentiate between genius and the lesser mental qualities so rampant among those whose lives are dedicated to conventions. In its attitude to this vastly interesting subject the medical mind, of all minds, is prone to make short shrift of the matter, by relegating all exceptional men to the vast cauldron kept continually a-glow and a-seething by the tender mercies of the neurologists imbued with the vagarious teachings of Moreau de Tours, Lombroso, and Grasset. That among the small army of the gifted there are those who, in connection with their talents, manifest obsessions and phobias, is a fact builded on solid rock; but since medical tendencies, nowadays, are only too readily affected by misplaced enthusiasms which lead to exaggeration—is not inclusion instead of exclusion their dominant note?—it would seem to some of us that the time is not inopportune to call a halt on whimsical diagnoses of a mental state that surely cannot always be explained on the grounds of semi-insanity and semi-responsibility. This attitude of ours may, at first sight, savor somewhat of the deplorable impenetrability that always accompanies scientific narrow-mindedness, and make for enough to invite unfavorable criticism; but the calmness of second thought would reverse the opinion, since with it would come to the critic a wider knowledge of what is going on in the world of real and serious thinkers to-day, in con-

nection with what really constitutes genius, and the characteristics whereby a sanely measured recognition may be effected.

A book in point—and one that would make profitable reading for all whose equilibrium has been disjointed by specious theories wrought by overheated medical writers—is Professor Wilhelm Ostwald's "*Grosse Männer*," recently published by the Akademische Verlagsgesellschaft of Leipzig, and wherein are stated so many engaging and convincing facts in regard to a proper diagnosis of genius, that, were one to study it repeatedly in all its minutiae, the time spent would not be wasted, for the compensation, in face of the multitudinous preachments which have hitherto been our undesired portion for cogitation on the sordid and despicable abnormalities of genius, could not be overestimated. Even though Professor Ostwald's contention, which he summarizes somewhat in this fashion—namely, that those students who are inadaptable to methodical teaching are the ones who should enlist our attention, for to them we must look for manifestations of genius—might admit of doubt from those who hold other views in regard to the matter, the truth of his contention would remain intact, since a rebellious intellectual spirit at an early age is indicative of much more than recalcitrance. If genius is a matter of human energetics—and a psychology that knows of the advantages of philosophical tenets will not be loth to admit this—then its best showing is made when its seeds evidence the first sign of sprouting, as a result of the unrestrained enthusiasm peculiar to this mental state abetted by the leaven of youth. As Froude has it, "submissiveness, humility, obedience, produce if uncorrected, in politics a nation of slaves, whose baseness becomes an incentive to tyranny"; and that these strong words would have answered as an excellent text for Professor Ostwald's scientific sermon, after changing the word "politics" to "education," is illustrated by his attitude towards the public schools of Germany and England, and better still, by his citations indicative of the early age at which the following aroused the nations to the appreciation of their genius: Goethe with "*The Sorrows of Werther*," Schiller with his play "*The Robbers*," Newton with his invention of the calculus and his analysis of light, Linnæus with his sexual system of plants, and Berzelius, Versalius, Carnot, Ludwig, Du Bois Reymond, and Kelvin, with their respective work. By these citations, as well as by the original biographies he gives of Davy, Faraday, Julius Robert Mayer, Liebig, Gerhardt, and Helmholtz, he shows how simple a matter it is to diagnose genius; for all these men were continually at war with surrounding conditions, and only by virtue of their respective energetics were they able to combat what would have

been so great a submergence to lesser minds that nothing above conventional acts would be here to record.

Aside from what this scientific exposition must mean to those, in the medical profession, who have been all along avid for a fuller definition of genius than was granted them by the constant reiteration of those abnormalities so dear to the tortuous mind of the neurologist, the lesson to be culled from a careful reading of this book, is one that has the deeper meaning that all writings of exceptional value must have, when their intelligent interpretation is made applicable to the worth and value of persons and things so that a wider appreciation may result. The tendency which we would deprecate among the doctors of to-day—especially among those who have our ear on account of their written word, be it wise or unwise—is their increasing enthusiasm when scenting anything that strikes their very correct way of thinking, as an undesirable opposite to the dry-as-dust and rectilinear mental habit which they pursue in effecting their daily vocations and avocations. Because their mentality is so well trained, and so inured to the belief that what they cannot conceive at once as normal must necessarily be abnormal, we are often unwilling witnesses to-day to a spectacle of farcical proportions when the elusive matter of genius is analyzed. And so widespread is the pose of aloofness and utter disregard of what genius must mean as a factor in the growth of thought to bring about a better civilization, that even the tyros in the medical profession, when but slightly encouraged, languidly express themselves in opprobrious terms—terms which even a dullard has no difficulty in construing into obsessions, delusions and sexual perversions!

All of which goes to show what a Philistine mind the medical is. But it also speaks out plainly of a narrowness of the mental horizon, that cannot be anything but a discredit to what is generally known as the most liberal of all professions. Influences such as these must ere long react on all opinions; and whether the thought applies to a purely medical subject, or to one with which in its idle, but alas! unphilosophical, moments medical science indulges in play, the vestiges, indicative of a stubborn and uncompromising front, are not hard to find. By no stretch of the imagination is this conservatism, for this quality, while quite undemonstrative, weighs with justice the pros and cons of a case. And when conclusions are arrived at, there is enough seriousness manifested to show that the thinking was not altogether on the surface, but had its tendrils deep enough in the brain of the thinker to formulate something that is not marked by the flippancy which nowadays is especially rampant, when the Philistine medical mind is called upon to define so weighty a matter as genius, and hedges by expatiating *ad nauseam* on all the indelicacies with which it hopes to excuse its ignorance of the subject.

PATHOLOGY AND THE ENGLISH LANGUAGE.

We have been quite sure for some time that the many laxities indulged in by our modern writers, when they were hard pressed for new metaphors, and failing to find them were not loth to use the most hackneyed and undignified ones, would ere long call forth a rebuke; but the characterization advanced by one of the editors of the *Lancet* in a recent annotation is much more than a reprimand, for the article sets forth that the usual metaphor employed by writers is really a fine specimen of pathological phraseology. And by modern writers is not meant, altogether, those who merely write to while away a pleasant hour, but also that ever-increasing army of contributors to the medical press, which is so careless of what the reader might think of the construction of its sentences, that most articles are as indigestible to the mind as is badly prepared food to the stomach. It has really become the fashion nowadays to write for the medical press with small regard for the reader's literary proclivities; the idea being that the author's novel experiences, in an unusual case, are sufficient to fasten the reader's attention, irrespective of the literary undress in which his adventures at the bedside are but poorly arrayed. Hence, there should be no surprise on the part of the reader when the incrustations, which should have some semblance of glitter, are nothing but a nerve-racking iteration of worn-out phraseology, pretentious terminology, and metaphors whose good old age makes a decrepit whimper for recognition.

If indignation is our part, upon contemplating how complacently inapt and decayed metaphors are used, what shall be our state when recalling our real tortures, after a submergence into the placid sea of the small number of Latin phrases that are always at the tongue's end of our voluminous medical writers! Who, to-day, we pause to ask, is unacquainted with the ever-recurring, "multum in parvo," "ex pede Herculem," "sine qua non," "quoad hoc," "ex parte"? the French phrases that have done yeoman's service these many years: "cela va sans dire", "apres moi le déluge", and that oft-buried but resurrected Italian phrase which we all regret that Galileo ever used: "E pur si muove"? Surely not the writers for the medical press; for illustrations of their deep knowledge of all these smites us as we open the pages of our weekly publications; and were we sure of our ground, and less appreciative that they are well-intentioned men of honor and probity, we would be tempted to accuse them of being component parts of a syndicate to upset the little peace that is granted us after a day's toil.

Feeling as we do about this matter, and having passed through many agonizing pains because we were fearful the outlook for improvement

was too dark to admit of any ray of light, we are rejoiced to learn that the repetition and age of the many verbal offenses above recorded, really belong to the province of pathology. If this is true, our depression ought at once to vanish, for with our knowledge of what surgery can do when guided by the beacon-light of pathological teachings, there might come a time when a specialist of language-operations will be as dexterous with the knife, as is the surgeon to-day when called upon to eradicate a condition pronounced, beyond the help of medicine or advice, by the clear and unmistakable tones of the pathologist. But until such time, the gnashing of our teeth must continue under the assaults of decayed metaphor and irritating foreign phrases!

The critical attitude assumed by the writer in the *Lancet*, has enough justification to warrant a series of articles on this subject. Of course, the casual reader is not so deeply affected, for he may or may not read an article, consulting his taste and inclination in the matter. But the editor is not so fortunately placed, since the duty devolves on him to read many things; and though it may be contended that time and the mechanical way in which he is wont to perform his duties should render him callous, we regret to say, such is not the case. In fact, instead of growing indifferent, as the years speed by, his sensitiveness increases until a stage is reached when the mere sight of a foreign phrase or trite metaphor which he has seen several hundred times, upsets him for the day. That a hypersensitiveness as regards so trivial a matter—we say trivial because the uncritical are of this opinion—should be the means of so great a disturbance, is really unfortunate, for it creates the sort of narrowness that makes war on all those bits of writing, which have by custom become the literary stock-in-trade of the writer for the medical press. Just how ineffective so great a prejudice is, is evidenced by the construction of the many papers which continue to use the same threadbare metaphors, aged similes, and ricochets across the very shallow pools of falsely-constructed foreign phrases that have unfortunately stood the test of time so well, that superficially thinking writers must needs think they are a necessary part of the English which has the greatest appeal for the reader.

LITERARY NOTES.

The subject of the heredity of cancer is at present a matter of such favorable discussion that certain authors are decidedly taken up with its probability. As a counterblast to this way of thinking we have, in the recent thesis, "Critical Examination of the Arguments in Favor of the Heredity of Cancer," by Dr. Hamonet, which sets forth the ideas ad-

vanced by Dr. Maurice Guillot, Surgeon to the hospitals of Bordeaux, a severe criticism of the theory of heredity when the theory is based only on insufficient data and defective statistics; and also the truism that a persistence in its belief is doing a most grievous wrong to the heroic efforts which are making in our present-day war on the spread of cancer. One of the arguments advanced by Dr. Hamonet against the heredity of cancer is the important fact which is now known in connection with tuberculosis. The idea of tuberculosis being hereditary is decidedly out of date, for the results, as stated even by its most ardent partisans, are not at all gratifying, since the cases where heredity plays the prominent part are very rare. Nevertheless, only a few years back, heredity was considered its most frequent cause, and the statistics, moreover, triumphantly showed that its frequency was two or three times greater than in cancer! Broca was so enamored of this theory that he wrote as follows: "It would be superfluous, in my judgment, to attempt to verify so evident a fact as the frequency of heredity as a cause of tuberculosis. The number of these instances is so great that my father-in-law, Lugol, considers all other cases as exceptional." Hérard and Cornil in their "Treatise on Phthisis Pulmonalis," state with emphasis that "there does not exist in pathology a proposition that is better established than the one of heredity in tuberculosis pulmonalis." In 50 per cent. of their cases they found their theory verified, and if they needed any further support, they got it from the statistics of Barthez, Piorry, Pidoux and Leudet, which read to the effect that heredity was the inciting cause in from 15 to 25 or 50 per cent. of their cases. Could anything be more effective in establishing the heredity of tuberculosis? For long this dogma was too sacred to be attacked, and unanimity of opinion made a perfect picture. But after the experiments of Villenin, and the discoveries of Koch, a break took place in the phalanx of the believers, and an inkling of the fatuity of their assertions was brought home to them. And thus it is with cancer. All argument based on statistics is valueless because these are not invariably alike, since they are only too often faulty as to the recording of age, the country in which they were gathered, and many other important details. But Dr. Guillot has proved, beyond a doubt, that statistics, following certain precise rules laid down by him, establish the fact that neoplastic antecedents are equally divided among the cancerous and non-cancerous. And, finally, Dr. Hamonet asserts that to abet the hypothesis of heredity in cancer is an attitude greatly to be deprecated; for, by showing this sort of spirit, we are really discouraging the sane efforts which all researchers are at present undertaking to combat the most obstinate disease known to medicine.

M. Mignard, commenting upon the theories of MM. Sérieux and Capgras in the *Revue de Psychiatrie*, relative to the delirium of interpretation, —a delirium based on a false reasoning that nevertheless has for the point

of departure a real sensation, an exact fact,—recalls the case of Jean-Jacques Rousseau who presented a remarkable example of this form of psychosis. Hypersensitive and distrustful, Rousseau was undoubtedly predisposed to delirious interpretation. His timidity was extreme, and while he was most exacting as regards the truth, he was also a believer in myths. Rousseau himself insisted on the impetuosity of his temperament and the feebleness of his criticism. His own words run as follows: "Sentiment appeals to me more than do the ideas which might enlighten me; it burns and vanquishes my strength. I *feel* but I do not *perceive*." At the age of forty, as the result of real ennui and genuine attacks of illness, he showed the beginnings of delirium. He imagined that d'Holbach, Voltaire, Grimm, and Hume were plotting against him. Although for the most part their hostility against him was real, that there was any systemization of persecution was an exaggeration that soon became a delusion. This period, indicative of a mental state with fixed delusions, was in its efflorescence when Rousseau was forty-five, the paramount obsession manifesting itself in the thought that the Jesuits were preventing the publication of "Emile" until his death. Then began his wanderings—in Switzerland, in England, and back again in France, to escape his imaginary persecutors. His most fantastic interpretations relate to David Hume, whom he accused of employing nefarious methods to lure him to the other side of the Channel. On his return to France his delirium showed signs of great expansion, and he did not hesitate to write on dead walls and hoardings the following remarkable protestations: "The magistrates hate me because I have attacked their despicable meanesses"—"The philosophers whom I have unmasked, wishing to ruin me, are succeeding etc." The last period of this peculiar mental state was marked by an almost illimitable development in the delirium, accompanied, strange to record, by complete resignation. So great had the obsession of persecution become that he included in the plot against his peace, the ferrymen along the Seine and the boot-blacks of the Temple and the Palais-Royal. And what should not be forgotten, it was during the last phase of his malady that he wrote "Reveries of a Solitary Promenader."

ORIGINAL ARTICLES.

THE CLINICAL STUDY OF THE BLOOD: THE BIOLOGICAL SIGNIFICANCE OF ITS CELLS AND THE PATHOLOGICAL SIGNIFICANCE OF THEIR VARIATIONS.*

By ARTHUR J. WHITING, M. D., Edin., M. R. C. P., London.

Physician to the Prince of Wales's General Hospital, London; Assistant Physician to the Mount Vernon Hospital for Consumption and Other Diseases of the Chest; Lecturer in, and Dean of, the Northeast London Post-Graduate College.

There are many different diseases of the blood, some that are amenable to treatment and some that are not; some that with our present resources are inevitably fatal and some that with appropriate treatment should speedily eventuate in complete recovery; and yet all, fatal and trivial, giving much the same physiognomy and much the same obvious clinical characters the nature of which I need not take up time by describing. For the differentiation of many of them a microscopical examination of the blood is essential, and it is the method and results of that examination I wish to consider.

The blood, as all are well aware, consists of cells floating in a plasma, the liquor sanguinis. For our present purpose we may neglect the blood plasma and concentrate our attention on the blood corpuscles.

THE BLOOD CELLS.

The cellular elements consist of the red blood corpuscles or erythrocytes, the white blood corpuscles or leucocytes, and blood plates. The red blood corpuscles contain hæmoglobin which has the function of carrying oxygen from the lungs to the tissues, a deficit in which pigment is the factor in anæmia that threatens life. The red cells themselves, you remember, are bi-concave, non-nucleated discs, from 7 to 8 micro-millimetres in diameter, numbering in healthy men about 5,000,000 per cubic millimetre, and 4,500,000 in healthy women. The leucocytes are colourless nucleated cells of several different forms and sizes, numbering from 5,000 to 8,000 per cubic millimetre.

The blood plates, about which but little is known, are round colourless bodies varying in size from perhaps one-tenth to one-third of the size

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of a red blood corpuscle, and numbering, perhaps, 200,000 in the cubic millimetre. I do not intend to take up time by discussing these beyond saying that they are probably concerned with blood coagulation.

STEPS IN THE EXAMINATION OF THE BLOOD.

There are at least five more important steps in the clinical examination of the blood suitable for use in active medical practice. These are (1) the microscopic examination of plain fields of blood; (2) the estimation of the number of the red blood corpuscles; (3) the estimation of the number of the white blood corpuscles; (4) an estimation of the amount of hæmoglobin; and (5) the microscopical examination of dried and stained films to show the presence or absence of abnormal cell elements and the relative proportion of the different varieties of leucocytes.

EXAMINATION OF FRESH SPECIMENS.

Very much may be learned from merely looking with the microscope at a thin layer of fresh blood. Such a preparation is easily made, and need not take more than a minute or two. The tip of the finger is probably the best place from which to obtain it in adults, the lobe of the ear in children, for then they do not see the actual pricking, and in infants the plantar surface of the great toe.

The skin may be rubbed with a damp towel and then dried; the prick made with a clean needle, or the special lancet, a surgical needle or one-half of a clean steel pen nib—each of which should be sterilised in the gas or lamp, and little or no pressure should be exerted to make the blood flow. A clean cover glass is applied to the drop, and then placed flat on a slide, when the blood spreads itself between the two by capillarity. Such a preparation will show the following points: Whether or not the individual red cells are of a good yellow colour, indicating a sufficiency of hæmoglobin; whether they are of uniform size; if some are large, macrocytes, and others small, microcytes, some stress on blood formation is probably indicated; whether the shape be regular—in very grave anæmias the red cells may be pyriform, with several processes, or almost any shape derived from the disc, in which case poikilocytosis is said to be present; whether the corpuscles form rouleaux rapidly and perfectly as in health or not; whether the fibrin network is dense and regular or not; whether the leucocytes are in considerable excess or not, normally they are very sparse, say 1 to 1,000 reds, but in leukæmia there may be 1 to 100, or 50, or 20, or even an equal number.

ESTIMATION OF THE AMOUNT OF HÆMOGLOBIN.

The next step is the estimation of the amount of hæmoglobin present. For doing this there are several methods, but I shall ask you to consider two only. The easiest, quickest, and cheapest of all is the Tallquist method. A drop of blood is placed on white blotting paper and com-

pared with a printed colour scale like that I now show you. A modification of this method made by Hawksley, in which the colour scale more nearly corresponds with nature, I now show you.

The other method is that with Gower's hæmoglobinometer, which I also show you. It consists of two small test tubes of identical calibre, one of which is filled with glycerine jelly tinted with picro-carminé to something like the colour normal blood would give with a certain dilution; the other graduated to 100 divisions, so that when 20 cubic millimetres of healthy blood are diluted 100 times, the tint in the two tubes is the same. A few drops of water are put in this graduated tube, then 20 cm. of blood measured by the pipette provided are added, and the mixture is diluted with water until the colour in the two tubes is the same. A background of white paper is desirable in judging of the colours, or the tubes may be held at the level of the eye between it and the light. In my experience, 100 per cent. of HbO is never given by healthy blood with these tubes, and as an absolute standard it is not reliable, but for consecutive observations by the same person it serves very well.

I should like to refer to two modifications of this method. One is by Dr. Haldane, of Oxford, who, instead of using the picro-carminé preparation as a standard, uses the actual blood heated with carbonic oxide as obtained from coal gas. The blood being tested must also be treated with coal gas as by the apparatus I show you which makes the method rather less convenient than the other. The second modification is by Sahli, who uses, instead of the picro-carminé solution, a solution of hydrochlorate of hæmatin and the blood to be examined is diluted with a decinormal solution of hydrochloric acid (15 parts in 1,000); this also is less convenient.

Perhaps the chief *indication in diagnosis* from observation on hæmoglobin is that in chlorosis, and in most secondary anæmias, as from nephritis, cancer, tubercle, syphilis, lead poisoning, etc., the amount is reduced more than the red cells, *i. e.*, each red cell is poor in hæmoglobin, while in pernicious anæmia the number of red cells is reduced more than the hæmoglobin, *i. e.*, each cell is rich in the pigment. From the point of view of clinical work, it may be said that as the hæmoglobin rises in ordinary anæmias the red cells increase in number, and so, bearing this in mind, the labour of a blood-count may sometimes be saved.

Enumeration of the Corpuscles. The best apparatus for counting the corpuscles of the blood is the hæmocytometer of Thoma-Zeiss, the price of which is about 30s. It consists of a pipette for diluting the blood 100 times or 200 times, and a slide ruled in very small squares for counting the corpuscles with the microscope. The pipette consists of a capillary tube opening into a glass bulb. Blood is drawn up the tube to the level of a mark on its stem, then a diluting fluid (nothing more is necessary for the purpose than normal salt solution, which may be tinted with methyl violet) is sucked up into the bulb at the end of the tube to a mark on the tube above it and the blood and fluid are mixed by shaking a glass

bead about in the bulb. A drop of the mixture diluted 100 times, or, if rich blood, 200 times, is now placed on the slide.

This slide consists of a central disc bearing the rulings which is surrounded by a rampart of glass at a little higher level (1-10th mm.) so that when the cover is applied a definite depth of fluid is obtained, and a definite area is marked out by the squares, each being 1-400th m.m. The squares are focussed, using a 1-6 in. or $\frac{1}{8}$ in. objective, and the corpuscles will be seen lying on them. I do not think it necessary to trouble you with details of the technique. They are quite simple, and readily become automatic with a little practice.

The number of red cells in, say, 50 or 100 squares is counted, and the average taken. Then the following calculation is made: The space above each square is 1-4,000 c.m., and the blood has been diluted 100 times; so, supposing the average number of red cells in a square is 12, the 12 multiplied by 4,000 would give the number of corpuscles in a c.m. of diluted blood, *i. e.*, 48,000, and this, multiplied by 100 (the dilution), *viz.*, 4,800,000, the number in a c.m. of undiluted blood.

Enumeration of Leucocytes. The same principle may be used for the white blood corpuscles though, as they are so much less numerous, a wider bore pipette with a smaller bulb is often used to give a dilution of only 10 times (the necessary calculation being made at the end), but in that case some fluid must be used to dissolve the red cells (which would otherwise obscure the lines) and leave the white; such a fluid is a 0.3 per cent. solution of glacial acetic acid suitably tinted. As a rule, however, in clinical work, both red and white cells are counted with the aid of the red pipette, a dilution of 1 in 100—and a device is used of making a field of the microscope correspond, say, with 50 squares (this can be done by lengthening or shortening the draw tube), and then counting the leucocytes in groups of 50 squares at a time—so many in each field.

Variation in Number of Red Cells. An excess of red blood corpuscles is met with in congenital heart disease, in certain cases with chronic cyanosis, rising to 8,000,000, 9,000,000, 10,000,000 or even 12,000,000, in persons living at high altitudes, and in the newly-born. A diminution in their number is met with in anæmias of all kinds, and in pernicious anæmia may fall to 500,000, or even 250,000, and 100,000 has been recorded. In chlorosis the number of red cells is not much diminished—to 4,000,000, it may be; in leukæmia perhaps to 3,000,000; after infectious fevers, in late tuberculosis, in syphilis, perhaps to 2,500,000. The fall in post-hæmorrhagic anæmia depends, of course, on the amount of blood lost; but recovery is fairly rapid.

Variation in Number of Leucocytes. The number of leucocytes may be increased normally as in the new born, during digestion, in pregnancy, and after muscular exercise; it may be increased in many pathological conditions, of which leukæmia is the most striking, but a definite increase is seen in most acute infectious diseases—in pneumonia, erysipelas, diphtheria, ulcerative endocarditis, but diminished in typhoid and influenza,

among other diseases, and not altered in tuberculosis. There is a leucocytosis in appendicitis, especially if suppuration be present, thus differentiating it from typhoid. There is usually a leucocytosis in cancerous and other cachexias.

If a leucocytosis is not met with where it is expected, for example, in the early stages of pneumonia where it is looked upon as an index of the resisting power of the system to the infection, an unfavorable prognosis is so far indicated.

Dried and Stained Specimens of Blood. The method of staining thin layers of blood for microscopic examination is especially directed to the differentiation of the varieties of leucocytes—a differentiation which leads to important clinical conclusions—and this differentiation can only be satisfactorily made by examining their nuclei (which like the nuclei of the nucleated red cells are only visible when stained) and the staining reactions of their protoplasm. This method is probably the most important of all in such blood examination as we are considering.

A small drop of blood is allowed to diffuse itself between two clean cover slips placed face to face; these are then slid apart, leaving a thin film on each. By waving them in the air, they are rapidly dried, and are then ready for fixing before staining.

The ordinary *fixing* agents are heat, either by means of a moderately heated oven, 110° C. for an hour, or 150° for five minutes, or passing the films rapidly through a flame five or six times; a mixture of absolute alcohol and ether in equal parts in which they are immersed for half an hour or longer; or immersion in a mixture of one part formalin with nine of absolute alcohol for half a minute, after which they must be thoroughly washed in water.

But the method of fixing I intend to recommend to you is accomplished at the same time that the films are stained by the staining-method I intend to advise you to adopt, the fixing is accomplished by the alcohol in the staining fluid.

Jenner's Stain. There are many methods of staining blood films, but that which I have come to consider as the most reliable, rapid, simple, and efficient—in other words the most suitable for our purposes—is by Jenner's stain. It is an alcoholic solution of a compound of eosin with methylene blue. It is to be bought ready made, either from Grubler's stains, or preferably, I think, in Grubler's original bottles in the liquid form.

Blood stains are divisible into two kinds—acid (in which the acid radicle of its constituent salt is the staining part) such as picric acid or eosine, and basic (in which the basic radicle is the active part) such as methylene blue. Speaking generally, the acid stains (as eosine) stain the protoplasm especially, and the basic stains (as methylene blue) stain the nuclei especially.

So with Jenner's stain the red blood corpuscles are stained red with eosine, and the nuclei of the leucocytes blue with methylene blue. The

method for using this stain is as follows:—The dried films are covered with the stain and left for five minutes or so. It is poured off, and they are washed in *distilled water*, dried and mounted in cedar oil or balsam. I may say that at a pinch you may use some methyl blue from the stain available for tubercle bacilli, and the eosine from the nearest red ink.

Varieties of Leucocytes. The main object of staining blood, as I have said, is to differentiate the leucocytes, and to recognize the presence of abnormal cells. What, then, are the *varieties of leucocytes in normal blood*? Speaking roughly, they are two—lymphocytes, with hyaline protoplasm and a single nucleus, and granulocytes, with granular protoplasm and a multiform nucleus—called the polymorphonuclear leucocytes. But each of these is divisible into three varieties, hyaline cells into whether they are small or large lymphocytes or having a lobed nucleus—transitional leucocytes. The idea being (it is almost certainly erroneous) that the latter form a transitional stage between the cells with a single round nucleus and the multiform nucleus of the granulocyte. The granular cells are divided into those whose granules stain with acid dyes—oxyphile or eosinophile leucocytes, those with basic dyes—basophile leucocytes or mast cells, and those that colour with both—neutrophile leucocytes.

The non-granular or hyaline leucocytes are, therefore, three—the lymphocytes proper—the small mononuclear leucocytes, the large mononuclear leucocytes, and the transitional leucocytes.

The lymphocytes are a little smaller than the red blood corpuscle; both nucleus, which is round and nearly fills the cell, and the mere rim of hyaline protoplasm stain blue with methylene blue, the protoplasm more deeply than the nucleus; the nucleus has a nucleolus and a fine intranuclear network. In healthy adults they vary between 20 and 30 per cent. of all the leucocytes.

The large mononuclear leucocyte is two or three times as large as the red cell, the protoplasm is relatively more abundant in proportion to the nucleus—otherwise their characters resemble those of the lymphocyte.

The transitional leucocyte resembles the large mononuclear leucocyte in every way except that its nucleus is lobed. It represents an older stage of this mononuclear hyaline cell. These two latter forms taken together vary in normal blood between 4 and 8 per cent.

The polymorphonuclear leucocytes are a little smaller than the large mononuclear. They are readily recognized in films stained with nuclear stains by the appearance of the nucleus. This consists of several masses scattered throughout the cell at first sight detached, but really connected by fine strands of nuclear substance, the whole like a spare string of beads, being twisted on itself in the form of S or Z or Y or E. The protoplasm stains with acid dyes, *i. e.*, faintly pink with eosine, but the granules embedded in it vary in different cells in their colour reaction. In the first group they are fine, numerous, and stain a purplish pink with Jenner's stain; these are the neutrophile polymorphonuclear leucocytes.

In the second group, the granules are larger, not so densely crowded, and stain a bright deep pink with eosine; these are the eosinophile polymorphonuclears. The third group have large and still fewer granules which stain blue with Jenner's stain; these are the basophile polynuclears, or the mast cells of the Germans.

The neutrophiles are the phagocytes proper, and are actively amoeboid; they are the most numerous of all the leucocytes in normal blood, varying from 60 to 80 per cent. The eosinophiles occur in from 1 to 5 per cent., and the mast cells from about 0.5 to 2 per cent.

Abnormal Cellular Elements. The abnormal cells which are important from a diagnostic point of view are two, first, a large mononuclear white cell—possibly the predecessor of the polynuclear leucocytes—normally found only in the bone marrow. These are called *myelocytes*. They are as large or a little larger than the polynuclear leucocytes, have a large round faintly blue staining nucleus, and granules either neutrophilic, eosinophilic, or basophilic.

The second abnormal cell is a *nucleated red cell*, the predecessor of the red blood corpuscle. In human foetal life, as in adult amphibia, birds, and reptiles, all the red cells are nucleated; but in healthy extra-uterine life they only occur in organs where blood formation is progressing, in the spleen in early extra-uterine life, and in the bone marrow in later life. But when stress of blood formation becomes great, the original nucleated forms escape in smaller or large numbers from the blood-forming organs into the general circulation. They are of three sizes—smaller than the red cell-microblasts, the size of a red corpuscle-normoblasts; and others two or three times larger—megaloblasts. The protoplasm is hyaline, yellow from hæmoglobin, and stains red with eosine like the ordinary red cell. The nucleus is round, has a coarse intranuclear network of even mesh, and no nucleolus, thus helping to distinguish it from the lymphocyte. Sometimes in the older cells, the nucleus stains so deeply with methyl blue that the network is not visible.

The Biological Significance of the Different Cells of the Blood. To take firstly the lymphocytes: these are hardly in essence blood corpuscles at all; it would probably be nearer the truth to call them lymph corpuscles—many of them at least are corpuscles of the lymph before they are corpuscles of the blood. They are formed in the lymph glands proper and in the lymph nodules in the spleen (there known as malpighian bodies) and elsewhere. If we study the structure of a lymph nodule we will find that there is a core of large mononucleated cells called the germinal centre by the Germans—surrounded by several layers of small mononucleated cells that have been formed by the division of the larger; these pass into the lymph or blood to become the small lymphocytes of the blood. But in conditions of stress on blood forming activity the large mononuclears may pass into the blood in greater number than normal, before they have divided into the small lymphocytes.

Next let us take the granulocytes: The polymorphonuclear leucocytes

are believed to be derived from large mononucleated cells occurring in numbers in the healthy bone marrow, the marrow cells or myelocytes. The nucleus has a nucleolus and the network in the nucleus is characteristically fine in mesh. These myelocytes, which have eosinophile, neutrophile, or basophile granules, under conditions of stress pass into the blood and become the abnormal myelocytes of the blood.

Next let us take the red blood corpuscles: At an early stage of its existence each red blood corpuscle is nucleated—a nucleated red cell. All are familiar with nucleation of ordinary red blood corpuscles in the case of the frog and other amphibia, the fishes, reptiles and birds—in them all their red blood corpuscles are nucleated red cells. In early foetal life of the human subject all the red cells are similarly nucleated. They are formed from similar but larger cells known as erythroblasts in the liver where they are associated with giant cells during early foetal life, in the spleen where again they are associated with giant cells during late foetal and early extra-uterine life, and in the bone marrows where they are again associated with giant cells during the whole of ordinary life. Under conditions of stress on blood-forming activity in the adult mammal as after copious hæmorrhage in dogs, as I have shown, they and the giant cells appear again in the spleen (the splenic pulp then looking almost exactly like the red bone marrow), and probably in the presence of chronic intoxications in the human subject. In leukæmia and other blood diseases erythroblasts with giant cells may be found in the spleen and liver. In regard to the giant cells which I may say are not amoeboid, I have found even them in the blood of dogs for some hours after severe hæmorrhage and cases have later appeared on record where in conditions of severe anæmia they have been found forming emboli in the human lung. So then the escape of red blood corpuscles, while still nucleated, from the blood-forming tissues into the circulation must be considered an evidence of stress on blood formation, still more when the erythroblasts escape into the blood megaloblasts as so called.

Signs of Stress on Blood Formation. To summarize the signs of this blood forming stress derived from the study of the blood: (1) the red blood corpuscles vary in size, megalocytes appear in number and the corpuscles may alter in shape giving poikilocytosis; (2) the large lymphocytes may come to be in excess 20 or 30 per cent. instead of 5 or 6 per cent.; (3) myelocytes, or as they are sometimes unhappily called, marrow-cells, may appear in the blood in numbers; (4) and nucleated red cells appear in the blood, normoblasts in the first instance and if the stress be prolonged megaloblasts in numbers.

The Clinical Indication of Abnormal Combination of Cells. I have described the normal cell elements of the blood and have given the ordinary percentage occurrence of each type and the usual method of making a *differential leucocyte* count is to place each leucocyte recognised in a film under its proper heading in a column, add each column up

separately, and all the columns together, and express each sort as a percentage of the whole.

I have also described the principal kinds of cells which occur in pathological states in the blood that are not normally present there. What are their indications in diagnosis? Mast cells are greatly increased in leukæmia and may even be in greater number than the largely increased eosinophiles.

The eosinophile leucocytes of asthma are not only greatly increased in leukæmia but also in the paroxysmal stage where they may have some diagnostic importance in trichinosis and in the presence of intestinal parasites, in skin diseases of various kinds and in malignant disease. They are decreased in acute infections and septic diseases.

The neutrophile polynuclear leucocytes make up the leucocytosis of acute infectious diseases, of digestion, of pregnancy, and of septic states particularly, and perhaps in ulcerative endocarditis. On the other hand they are usually diminished in typhoid, measles, and influenza and unaffected in tuberculosis unless complications and especially suppuration have arisen.

Diagnosis and Prognosis Based on the Recognition of These Abnormal Occurrences and Combinations. Shortly nucleated red cells are the index of any severe anæmia, whether after copious hæmorrhage from any cause or from some hypothetical chronic toxæmia as in pernicious anæmia or spleno-medullary leukæmia. In pernicious anæmia when it is recognized they are much less numerous according to my own experience than in leukæmia and in any case they are of grave prognostic import, especially when in the form of megaloblasts.

Poikilocytosis again is a sign of intense anæmia and may be due to accidental or other hæmorrhages almost as often as to such primary anæmia as pernicious anæmia.

Myelocytes, while they may occur sparsely in the early weeks of healthy life, or in rickets, congenital syphilis and other conditions, are especially diagnostic of spleno-medullary leukæmia where they occur in large numbers. The mononuclear leucocytes are increased in the gastro-intestinal diseases of infancy, in whooping cough and several other diseases, but *par excellence* in lymphatic leukæmia and in the acute varieties of this disease and in a probably distinct disease of children known as lymphocythæmia, in which the prognosis is extremely grave, the large lymphocytes are in great excess.

In conclusion I would suggest that a study of the blood is fundamental in the diagnosis of a large group of diseases and that it is a possible and even suitable subject for original work even for those who are unable to spare the time for what may be called laboratory research.

LECTURES ON PSYCHIATRY.

(PLANNED TO INCLUDE SIXTEEN EXERCISES FOR SENIOR STUDENTS.)

By SIDNEY I. SCHWAB, M. D., of St. Louis.

Professor of Nervous and Mental Diseases, St. Louis University Medical School.

INTRODUCTION.

With the awakening of interest in psychiatry there has come about an active consideration of methods by which an adequate knowledge of mental diseases may be given to students. Teachers of psychiatry have had to face a pedagogic problem of unusual difficulty, and in a sense, unique. While there is a general admission that psychiatry is of great importance to the medical student, especially in its medico-legal relations, yet, its teaching has taken up but little of the interest of those who plan out the course of instruction in medical schools. The probable explanation of this lies in the fact that in most communities where its teaching is undertaken, the sources of clinical material are so far removed from the control of the instructor, that it seems almost impossible to plan a successful course. As a rule the clinical material is to be found in asylums far removed from the city, access to which by students is both difficult and time-consuming. In other places where the source of material is within reasonable distance, its control is not in the hands of the teacher. In a few cities, no such difficulty is presented. Here in St. Louis, however, the conditions are largely those of the average city in this country, in which the teaching of psychiatry has been attempted in the medical schools, both didactically and clinically. Clinical material in great abundance is found in the City Asylum, a large institution under the direct and full control of a superintendent, an appointee of the city. This superintendent has no teaching position in the medical schools, there is no staff of visiting physicians, so that the teachers of psychiatry have no connection whatever with the institution. Each school in the city is allowed one day a week for half a year. At this time the senior students of the school are given, for an hour and a half to two hours, clinical demonstrations of cases by an instructor in psychiatry at the school of which they are members. Material is furnished through the courtesy of the superintendent. The pedagogical problem is then as follows: What is the best possible method for putting before a class of senior students such a knowledge of mental diseases as can be given in a series of sixteen lectures with clinical demonstrations? It was found that a carefully planned course of didactic lectures, of about three-quarters of an hour each, to be followed by a clinic in which cases illustrating the sub-

jects of the lectures were presented, the clinic lasting about one and one-half hour and followed by a ward visit in small sections, was the most practicable method. The advantage of such a scheme of instruction is that the student is presented with a definite succession of the facts of mental diseases, a succession of clinical pictures and some notion of asylum methods and therapy. Contrary to what might be supposed, it is a very easy matter to arouse in the average student a vital and increasing interest in psychiatry. It has been found by experience that perhaps there is no subject to which an average student lends a more willing ear and a more earnest attention. It is not, however, by didactic lectures that this interest can either be aroused or retained, but the combination of the lecture and the clinical demonstration are essential.

The lectures herewith set down are the result of some years' work in the attempt to place before the senior students in the St. Louis University Medical School some notion of psychiatry. They aim to give in orderly succession the chief facts and theories of psychiatry, to make the student feel an interest in diseases of the mind, and to enable him to realize the importance of a knowledge of psychiatry on the part of the physician both in his relation to his patient, and the relation of that patient to the State. I need scarcely add that no claim for originality is made for these lectures. I am under obligations to all of the well-known textbooks, especially to that of Kraepelin and to articles too numerous to mention that have appeared in the last few years in various journals. I especially wish to express my appreciation of the courtesy of Dr. H. Atkins, the superintendent of the St. Louis Asylum, for furnishing clinical material, and to Dr. Unterberg, my assistant, for intelligently selecting the cases for demonstration. These lectures are, therefore, printed as a contribution to the pedagogic aspect of psychiatry.

LECTURE No. I.

The object of this brief course in psychiatry is to make you acquainted with some of the important facts of diseases of the mind, both as a part of the science of medicine and as a part of your medical discipline, by bringing you into as close contact as is possible with individuals who are the subjects of mental diseases. The most important feature of this disease lies in such deviations from what is considered the normal and average mentality as to justify the individuals so affected to be regarded as insane. The study of this science is called "psychiatry," and its purpose may be put down in this way.

Psychiatry attempts to describe within the present limits of our knowledge the pathological and abnormal phenomena of the mind, and to understand them as far as it is possible to do so. It further aims to discover and discuss rational measures, medical and otherwise, by which such disturbances may be corrected, and the individual who is the subject of them be directed along the path which may be considered normal for him. The study of the pathological changes underlying such condi-

tions is sometimes called "mental pathology." This part of the subject is of less importance at the present time, owing to the limited progress that has been made in spite of the efforts of numerous investigators. Anatomical changes underlying abnormal mental states are so often not found at all, or, so illusive that with the exception of two or three diseases, no positive relation between anatomical changes and abnormal symptoms can be deduced. The study of mental functions, found in abnormal mental conditions, is termed "abnormal psychology." It is probable that under this head the greatest advances in our knowledge of the causes, the origin and the development of mental symptoms will be found.

In studying the above definition of psychiatry I might call your attention to the qualification which was made in regard to the limits of our understanding of the mind. It is just in this limitation that one of the great difficulties of the subject lies. We must always consider that the only instrument we have to examine a diseased mind is a mind essentially of the same kind without being diseased. This is, and will always be, our only instrument of investigation. For this reason we must see that we can precede only to a certain limit. This limit depends upon an appreciation of our own mental state and a comparison of that with others, both diseased and normal.

The question of personality, or rather changes in personality, is all important in the study of psychiatry. I might emphasize here the fact that a case of insanity is always an individual that is insane and that he is different from all other individuals by that complex which we call "personality." An educated, cultured individual will react to abnormal mental processes in a different way than one who is ignorant and uncultured. The resulting clinical picture in the one will be evidently different from the clinical picture in the other, inasmuch as the individual in one case is different from that in another. There is in this a striking distinction from the more common organic diseases. Whether an educated or uncultured individual is attacked by typhoid fever, the resulting clinical picture is largely the same, or, if it does differ, this difference does not depend upon the grade culture of the individual.

What, then, is meant by the term "insanity?" All departments of knowledge should have a clear conception of what is implied in that department. A difficulty in psychiatry is immediately met with when we try to give a definition of the very subject we propose to study. The problem is almost unique. There is scarcely a department of human knowledge, the study of which can not be started by a definition. When we come to define insanity we are immediately met with the objection that, inasmuch as the normal sane individual cannot be defined nor limited, therefore the abnormal insane individual cannot. In spite of many efforts, no adequate definition of insanity, from the medical point of view, has ever been made. There is no definition which leaves in our mind a feeling of satisfaction. It is necessary here to sharply dif-

ferentiate the medical from the legal point of view. The law has been forced to make a dogmatic definition, a definition that shall fulfill the purpose of justice. This definition has absolutely nothing to do with the medical point of view, nor has it shown any tendency to shape itself along the lines which psychiatry has developed. It is still the same definition that was devised when psychiatry was yet in its infancy. The law's definition concerns itself with only one phase of the subject, that is, the patient's responsibility before the law. It is assumed, of course, that in order to be tried for a crime, the individual must be responsible for the deed that he committed. For this reason the law has to do with questions of knowledge, of what is good and bad, of what is right and wrong, and as long as the patient under consideration has that knowledge, so long does the law consider him normal.

In order to get closer to our notion of insanity, a few samples of attempted definitions might be given:

Chapin says that insanity is that mental condition characterized by a prolonged change in the usual manner of thinking, acting and feeling, the result of disease or mental degeneration.

Esquirol: A cerebral affection, ordinarily chronic, without fever, characterized by disorders of the sensibility, of the intelligence, and of the will.

Regis: Insanity is a special disease, a form of alienation, characterized by the accidental, unconscious and more or less permanent disturbance of the reason.

Dana: Insanity is a serious alteration in the psychical functions of the brain. This leads to such departure from the normal in speech and conduct, that the patient can no longer adapt himself sufficiently to his environment.

It can be seen from these definitions that they are concerned either with an attempt to give it a psychological basis or with an attempt to describe an insane individual in relation to his environment. In other words, these definitions try to give the cause and the effect of disease at the same time, an obviously impracticable thing to do in a definition. It is well nigh impossible to define so complicated a thing as an individual, and is equally so to define so much more complicated a thing as an abnormal individual. Therefore, no definition, that has any utility, can likely be devised. The one thing that can be done, however, is to indicate in a general way what an insane individual means to one who is sane, and what he is in relation to his environment. This brings us to the question of conduct which may be considered in general as the reaction of an individual to his environment insofar as his personality finds a partial expression. Normal conduct is largely a matter of the interaction of the average of personalities, in any given stratum of society, with modifications of environment, family, society, and other factors taken into account. It is a disturbance in conduct, a lack of normal reaction to his kind and circumstance which, in the minds of most of us, points to an

individual as being insane. When this reaction, or this disturbance in conduct passes beyond the limit which the organized law and custom have set, then the individual becomes a subject of legal scrutiny, and upon his insanity or sanity depends the question of his legal responsibility. It is in this larger sense that I would have you consider an insane individual, and from the clinical point of view there will always be some such disturbance in conduct that will receive emphasis.

White, in a recent interesting little book, entitled, "Outlines of Psychiatry," with this notion in view, has devised a definition which, to my mind, is extremely valuable. Insanity, he says, is a disorder of the mind, due to disease of the brain, manifesting itself by more or less prolonged departure from the individual's usual manner of thinking, feeling and acting, and resulting in a lessened capacity for adaptation to the environment.

It can be seen from this how much we have advanced from the early attempts that were made to define insanity. The earlier attempts were doomed to fail because the limits of the problem were not clearly seen. With the acknowledgement that a perfect or even a practical definition was well nigh impossible, the beginning of a more adequate definition was in sight.

(Cases were shown to demonstrate different grades of intelligence as affected by mental disease, modifications of conduct and personality.)

THE PRESENCE OF TUBERCLE BACILLI IN THE CIRCULATING BLOOD IN TUBERCULOSIS.

(From the Pathologic Laboratory of the St. Louis City Hospital.)

By ALBERT E. TAUSSIG, M. D., of St. Louis.

In February of this year much interest was excited by a paper by Rosenberger with the same title as that of this article. By the use of a comparatively simple technique, he had found what he considered tubercle bacilli in every one of a large number of cases of tuberculosis, incipient and advanced, pulmonary, glandular or involving the bones. Briefly, his method consisted in taking 5 c.c. or less of blood from a vein, mixing it with 5 c.c. of a sterile physiological salt solution containing two per cent. of sodium citrate. The tubes were allowed to stand 24 hours or longer in the ice chest. Thick spreads were made of the sediment. These were allowed to dry, then laked with distilled water and, after all the hemoglobin had been extracted, were stained and counterstained in the usual manner for tubercle bacilli. Sometimes a prolonged search was required for the demonstration of the bacilli in such a slide, but usually, it was asserted, they could be found at least as readily as in the sputum.

It was not long, however, before adverse opinions were uttered. A few clinicians and pathologists expressed themselves as having been successful with the method, but the majority confessed failure. In the St. Louis City Hospital, a number of my co-workers and I tried the method on a large number of tuberculous patients, immediately after the appearance of Rosenberger's paper, but with uniformly negative results. The objection that our failure to find the bacilli was due to lack of patience or to faulty technique could so readily be made that it seemed worth while to subject Rosenberger's results to some more crucial test. From a series of patients with relatively advanced tuberculosis, spreads were made according to Rosenberger's method and, in addition, the entire sediment from 5 c.c. or more of the venous blood was injected subcutaneously into the groin of a guinea-pig. As will be seen from the following summary, the bacilli could not be found in a single case, while the guinea-pigs showed at no time any evidence of infection and, when killed from 72 to 90 days after inoculation, showed no evidence of tuberculosis. It is evident that if the bacilli can be found microscopically in a spread, the inoculation of a guinea-pig with an amount of sediment many times as great as that used for the microscopic preparation could not fail to produce tuberculosis.

Case 1. Pulmonary tuberculosis with infiltration of one apex; tubercle bacilli in the sputum. Spread, according to Rosenberger, negative. Guinea-pig, inoculated with entire sediment of 5 c.c. of blood, remains well and fat. No lesion at site of inoculation. After 90 days the pig is killed; no evidence of tuberculosis found.

Case 2. Pulmonary tuberculosis with cavities; tubercle bacilli in sputum. Spread, according to Rosenberger, negative. Guinea-pig inoculated as above; remains well and, when killed, 89 days later, shows no evidence of tuberculosis.

Case 3. Tuberculous peritonitis with cavities in the lungs; tubercle bacilli in sputum. Spread, according to Rosenberger, negative. Entire sediment of 10 c.c. of blood inoculated into two guinea-pigs. Both remain well, one of them giving birth to two young. When killed, after 83 days, no evidence of tuberculosis is found.

Case 4. Pulmonary tuberculosis eventually developing general miliary tuberculosis, (autopsy). No tubercle bacilli found in sputum. Spread, according to Rosenberger, negative. Guinea-pig injected with entire sediment of 5 c.c. venous blood, remains well, and, when killed, 83 days after inoculation, shows no sign of tuberculosis.

Case 5. Pulmonary tuberculosis with cavities, terminal. Tubercle bacilli found in sputum. Spread, according to Rosenberger, negative. Guinea-pig injected with entire sediment of 5 c.c. blood, loses weight, but does not seem ill. Gave birth to healthy offspring. When killed, 72 days after inoculation, shows no evidence of tuberculosis.

Case 6. Pulmonary tuberculosis, cavities in both apices, tuberculous peritonitis; tubercle bacilli in the sputum. Spread, according to Rosenberger, negative. Guinea-pig inoculated with entire sediment from 5 c.c. blood remains healthy and, when killed, 72 days later, is found not to be tuberculous.

It was not considered worth while to carry this work further since the point at issue was not whether the blood of tuberculous individuals ever contains tubercle bacilli, but whether it always or even usually does so. It will be seen that the cases selected were of a nature to lead one to expect a tubercle-bacillema, if this ever occurs in a localized infection. Rosenberger's contention, that his method is of diagnostic value in tuberculosis, must therefore be considered mistaken.

While the above work was in progress, two articles appeared in which the writers arrived at the same results and one of which, at least, throws further light upon the question at issue. Bailey inoculated seventeen guinea-pigs with 1 to 2 c.c. of sedimented blood (fifteen with the blood from cases of advanced tuberculosis and two with the heart's blood from autopsy on cases of general miliary tuberculosis). None of the animals became tuberculous. In every one of his smears, according to Rosenberger's method, artifacts resembling tubercle bacilli were found. It is a well-known fact that such acid-fast artifacts occur whenever sputum or other albuminous substance is heated before it is quite dry. In our spreads such artifacts were absent, probably on account of the scrupulous care with which this error was avoided. Brem also obtained negative results and has put his finger on a still more insidious source of error. He found that the distilled water, furnished to his laboratory, invariably contained an acid-fast bacillus, undistinguishable

microscopically from the tubercle bacillus and probably belonging to the group of the grass bacillus. In all of the solutions made up with this water, as well as in all blood-spreads laked with it, the bacillus could be demonstrated. Water, freshly distilled from vessels rinsed with strong nitric acid, and blood from tuberculous individuals, sedimented in solutions made from this water and laked with it, failed to reveal the presence of any tubercle bacillus-like organisms. In our cases, this source of error was avoided, probably because we used fresh tap-water instead of distilled water.

It gives me pleasure to acknowledge my indebtedness to Dr. D. L. Harris, City Bacteriologist, for permission to work in his laboratory and for numberless other favors.

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THE PHYSIOLOGY OF SHOCK.*

By M. G. SEELIG, M. D., and E. P. LYON, M. D., St. Louis, Mo.

It seemed only a short while ago that the question regarding the underlying physiological basis of shock was settled for good and all. The excellent experimental work done by Crile established a doctrine, so generally accepted that one hardly felt the necessity for any further investigative work along similar lines. And yet, withall, the problem of surgical shock is not solved, and we are about as much in the dark as we were two decades ago. It is not entirely without interest to survey, from an historical point of view, the work that has been done along these lines. The clinical picture of shock, such as we recognize it to-day, was not unknown to the ancients; indeed, they vividly expressed their loss to account for death following severe trauma, without visible post-mortem lesions of gravity, by referring the *exitus lethalis* to a "Deus ignotus." And right here it may be said that the unknown god, by virtue of inherent necessity, still plays no small part in our conception of the etiology of shock. This vague and, if we may so term it, theistic conception was not displaced until toward the beginning of the 19th century. Indeed, the word "shock" as we now use it, was first introduced in 1795, by James Latta. Up to this time "shock" signified merely a force, or blow, but Latta changed the significance of the word, so that it connoted the results consequent upon a force or blow. So apt is the word, and so specific in nature, that it has defied translation, and been taken over bodily in all the continental tongues.

Guthrie, Hennen and Travers did much to stimulate interest in the causation of shock, and their work was all the more effective by virtue of the fact that just about this time (1827) railroads were coming into popular use, and were increasing the list of cases of shock due to severe trauma. Astley Cooper, Copland, Paget, Erichsen, Pirogoff, Little, Syme, Savory, all added contributions to the subject. So far, however, no one had attempted to attack the problem by way of experiment. The Crimean war, and also our own civil war, with their tremendously long lists of injuries and fatalities, emphasized the absolute necessity of determining to what factors this obscure symptom complex owed its origin. The medical report of the Crimean war epitomized, in one sentence, the uncertain state of knowledge concerning shock, when it stated that "the term shock is a convenient name, but not a very philosophical

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Note.—From the Physiological Laboratory of the Medical Department of St. Louis University.

one." As a result of observations made during our civil war, W. W. Keen, Weir-Mitchell and George Morehouse,¹ working together, framed a theory that explained the phenomena of shock in accordance with the same principles laid down by Crile nearly forty years later. Keen's work was largely clinical, Crile's largely experimental. Keen's clinical deductions, however, were confirmed by experimental work done in Germany during the seventies by Jordan and Fischer, both of whom founded their work largely on the now famous experiments of Goltz.

As the problem stands to-day there are several contradictory theories. Crile⁹ and his followers maintain that vasomotor exhaustion is the primary cause of shock, Boise¹⁰ states that cardiac exhaustion is the prime cause, whereas Howell¹¹ believes that both these factors (cardiac and vascular) must be reckoned with. Meltzer,¹² after a critical survey of the literature, concludes that shock is consequent on the development of the inhibitory side of all the functions of the body. Kinnaman² argues for a disturbance of the thermogenic function, Jaboulay³ for the formation of an irreducible oxyhemoglobin, Vale⁴ for an increased specific gravity of the blood, Henderson⁵ for the reduction of the carbon dioxide content of the blood and tissues (acapnia), Bainbridge and Parkinson⁶ for a loss of chromaffin tissue following trauma, and Schur and Weisel⁷ for a loss of this same tissue following the administration of volatile anesthetics.

Our object is neither to criticise these various theories nor to add a new theory to the already formidably long list. Cardiac excitation and inhibition, vascular dilatation and contraction, the *modus operandi* of the sympathetic nervous system, the complex phenomena of exhaustion and inhibition, would all have to be taken into account by a theory, despite the fact that not one of the factors that we have mentioned is understood fully.

This much is certain, however: that low blood pressure is a constant accompaniment of a pronounced degree of shock—so constant, indeed, that investigators practically always express the state of shock in terms of manometric pressure. We have based our experiments on the fact that the blood pressure is always low in shock, and we have set as our problem the determination whether the peripheral vessels are contracted or dilated during the time that the pressure is low in the larger, more centrally situated vessels, such as the carotids.

Mitchell, Morehouse and Keen, Groenigen and others assert that the peripheral vessels are not contracted, because, in the first place, no one has ever shown that they are, and, in the second place, because it is not probable that the peripheral vessels can be contracted tightly for any great length of time.

1. Circular No. 6, Surgeon General's office, 1864.
2. Kinnaman, R. C.; *Internat. Jour. Surg.*, 1904, p. 378.
3. Jaboulay, L.; *Lyon méd.*, 1904, p. 378.
4. Vale, F. P. *Med. Rec.*, Aug. 27, 1904.
5. Henderson, Y.; *Am. Jour. Physiol.*, 1908, p. 126.
7. *Wien. klin. Wchnschr.*, Feb. 20, 1908.

Crile argues that, consequent on vasomotor exhaustion, the peripheral vascular system is paralytic and, therefore, relaxed. Porter,⁸ on the other hand, denies Crile's contentions *in toto*, and seems to show that the vasomotor center is not exhausted. Neither Crile nor Porter, however, directed their attention to the vessels themselves.

Malcolm,¹³ of London, dealing with the problem from a purely clinical point of view, makes two assertions: 1, that the peripheral vascular system is contracted in shock; and, 2, that a state of low blood pressure is thoroughly consistent with contracted peripheral arterioles. Malcolm makes an uncommonly strong clinical argument against the views of Crile in a fashion that refreshingly demonstrates the invaluable aid of clinical medicine to laboratory experimentation. If the theory of vasomotor exhaustion is correct, says Malcolm, then the network of smaller peripheral arterioles, being cut off from central control, must be relaxed. This relaxation should result in an overfilling of the vessels, but, as a matter of fact, all clinical evidence speaks against such an overfilling: the body surface is cold and pale, the mucous membranes are anemic, incisions made during the state of shock are almost bloodless, the radial pulse is often small to the degree of being inappreciable, and the application of surface warmth tends to lessen the symptoms of shock, despite the fact that warmth usually relaxes vessels.

There are three possible ways of determining whether the peripheral vessels are dilated or contracted: 1, the vessels may be inspected visually; 2, the outflow of blood from an organ or extremity may be measured; 3, coincident variations in venous and arterial pressure may be measured. In our work, which has been done on dogs, we have used only the first two or three methods. We studied visually the vessels of the retina and measured the outflow from the femoral vein. We selected the eye as the site of visual inspection of the caliber of the vessels, because this is the only situation where the vessels can be studied without the necessity of exposing them by dissection. It is unnecessary to say that the caliber of a vessel that has been traumatized by dissection affords no reliable index of the caliber of that same vessel in an undisturbed state. We selected the femoral vein from which to measure the outflow because the circulation in the extremity is, in the strictest sense of the word, peripheral, and because the femoral vein is more accessible than is the axillary.

Our procedure was as follows: Under Grehant anesthesia the carotid artery was connected to a recording manometer and the blood tracing started. Both femoral veins were dissected free, ligated where they leave the thigh to enter the abdomen, clamped just below this, and divided between ligature and clamp. Paraffined canulas were tied into the distal

8. Porter, W. T.; *Am. Jour. Physiol.*, 1907-08, pp. 399, 444, 500.

9. Crile, G. W.; *Blood Pressure in Surgery*. Phila., 1903; *An Experimental Inquiry into Surgical Shock*. Phila., 1899.

10. *Am. Jour. Obstetrics*, 1907; *Trans. Am. Gyn. Assn.*, 1908.

11. *Amer. Med.*, 1904, p. 482.

12. *Arch. of Int. Med.*, July, 1908, Vol. 1, p. 571.

13. Malcolm, J. D.; *Lancet*, 1905, i, ii, 57 *Med. Chir. Tr.*, 1908.

ends of the veins. Both sciatic nerves were dissected free at the posterior aspect of both thighs, and a bridle ligature was placed under each nerve so that it could be drawn out and divided with ease and rapidity. Only a minimal amount of fall of blood pressure resulted from this preliminary, as a rule.

The clamp was now removed from the left femoral and the blood allowed to flow through the canula into a tall glass graduate of moderately small caliber. After about 25 or 30 c.c. had flowed out and the current of blood was running smoothly and evenly, readings were begun in order

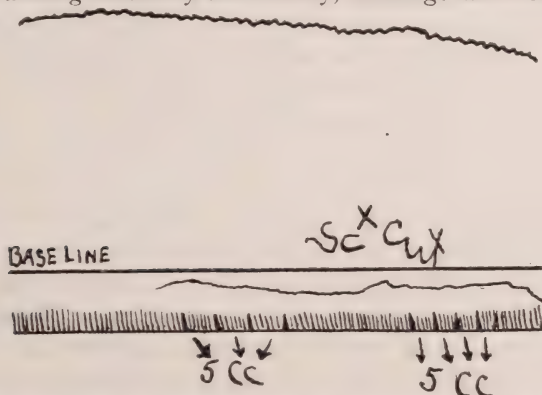


Fig. 1.—Tracing indicating outflow of blood in experiment on Dog 3. Moderate blood pressure. No evidence of shock. Division of sciatic (at X) followed by more rapid outflow of blood from femoral vein. Time markings, 1 second.

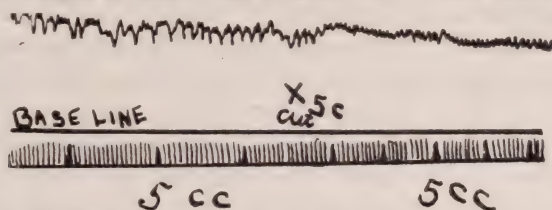


Fig. 2.—Tracing indicating outflow of blood in experiment on Dog 3. Very low blood pressure. Animal in profound shock approaching *exitus letalis*. Division of sciatic (X) followed by a proportionately more rapid outflow from femoral vein than in Fig. 1. Time markings, 1 second.

to note the rapidity of the flow. The method of making these readings was as follows: At the moment the reading was begun an electric button connected with the second-time marker was pushed. After 5 c.c. of blood had flowed the button was pushed again, and this was repeated at the completion of the flow of each fifth cubic centimeter of blood until the time record on the drum showed four or five periods, each one representing the time flow for 5 c.c. of blood. Then the left sciatic nerve was severed and, after waiting a short while for the flow to steady, the time flow for 5 c.c. was recorded several times. The animal was then reduced by a state of shock, by manipulation and chilling of the abdominal viscera, and after the blood pressure showed a permanent fall the blood flow was measured from the right femoral vein, just as it had been from the left one, before and after section of the right sciatic nerve.

The vast majority of vasomotor impulses that reach the blood vessels

of the hind leg of a dog travel through the sciatic nerve; therefore, as is well known, severance of this nerve results in vasodilation in the extremity, and consequently in a more rapid flow of blood from the femoral vein. This point is illustrated by the tracing shown in Figure 1. Before the sciatic was cut it took seven seconds for 5 c.c. of blood to flow out, whereas after the sciatic was divided the same quantity of blood flowed out in five seconds. The crux of these experiments lay in the rate of outflow after the animal was reduced to a state of shock, for if in profound shock the vessels are beyond the control of the vasomotor centers, then severance of the sciatic nerve ought not to make any appreciable difference in the rate of flow. All our experiments showed that the proportional rate of flow from the vein was more rapid after division of the sciatic in a shocked animal than it has been from the opposite veins before the animal had entered the state of shock. Figure 2 is a continuation of the tracing shown in Figure 1, taken from Dog 3 of our series. This portion of the tracing represents a period when the animal was in a profound degree of shock. It will be noted that before the sciatic was divided it took nineteen seconds for 5 c.c. of blood to flow, whereas after section of the nerve it required only eleven seconds. This shows that the intact sciatic must have been transmitting impulses that were maintaining vascular tone. More than this, the proportionately more rapid flow* can not be due to an actually greater dilatation of the vessels in one instance than in the other, because in both instances we have a maximal dilatation consequent on severance of the nerve. It must be due to the fact that during shock the vessels (arterioles and capillaries) are more contracted than they are before the animal shows the effects of trauma. It must be borne in mind clearly that these experiments do not show anything more than that the division of the sciatic nerve of a shocked animal causes dilatation of the vessels of the leg, just as it does in a normal animal. This dilatation, however, is proportionately greater than that which occurs in the normal animal, and this proportional difference must be referred to the fact that in the shocked animal, before division of the sciatic, the vessels are in a state of greater contraction than they are in the normal animal.

Two reasonable objections may be made to our results, on the ground, first, that the time measurements were not accurate in the strictest scientific sense, and, second, that the anterior crural nerve was not severed so as to cut off all possible vasomotor impulses to the leg. As regards time measurements, they were not taken automatically and were, therefore, not true to a fraction of a second. Repeated experiments, however, demonstrated that this source of error was minimal, and, furthermore, our object was not to measure the exact time rate. We did not sever the anterior crural, because we found this procedure to be unnecessary. Our object was not to cut off all impulses, but to block out most of them.

*In the normal animal, the rate of flow before and after division of the sciatic was 7 to 5, whereas in the shocked animal the rate was 19 to 11. These two sets of figures demonstrate a proportionately more rapid outflow in the shocked animal.

The task now remains to confirm by visual inspection the statement that the peripheral vessels are contracted. For reasons already stated, we selected the retina as our field for this part of our work, and we are indebted to Dr. John Green, Jr., for our ophthalmic reports. Unfortunately, we failed in efforts to devise a scheme for measuring, with absolute accuracy, the diameters of the retinal vessels. In order that Dr. Green might not be prejudiced by the facts already secured by us, he was not told about them, being merely requested to examine the fundi of the dogs' eyes, before and after shock was induced, and to note carefully the size of the vessels. He took the size of the optic disc as his standard and compared the size of the vessels with it. In every instance he reported that the vessels showed a marked degree of contraction after the animal was in shock. The vessels contracted down to from one-third to one-half of their size before shock.

Two observations were particularly interesting: In one case the dog died immediately after an examination of the fundus which had disclosed marked contraction of the vessels, thereby demonstrating that vasoconstriction persisted up to the very point of *exitus lethalis*. Unfortunately, we neglected to examine any of the fundi after death in order to see if vascular relaxation occurred. The second observation of especial interest was a case in which the retinal vessels were contracted so tightly as to make them resemble mere strands. In this connection it is interesting to note that ophthalmic literature contains at least two reports¹⁴ of sudden blindness occurring during shock, lasting from two to five hours, and then passing off without leaving any demonstrable eye changes or disturbances of vision. Roberts, who makes these reports, does not give the fundus findings during the state of shock, nor does he attempt to explain the cause of the blindness; but it seems fairly reasonable to assume that the occurrence of a sudden acute anemia of the retina, resulting from pronounced contraction of the retinal vessels, might cause transient blindness.

In conclusion it is important again to emphasize the fact that the experimental work detailed in this paper is in no sense of the word to be taken as an explanation of the causative factor or factors of shock. Just as Porter claims to show explicitly that in shock the vasomotor center is not exhausted and, therefore, implicitly that the peripheral vessels are not paralyzed, so we try to show explicitly that the peripheral vessels are contracted, and implicitly that not all the vasomotor centers can be exhausted. The complexity of the vasomotor apparatus, with its multiplicity of centers, and the seemingly independent action of many of these centers, render it impossible to frame a satisfactory theory based on our results. This much may be said with assurance: If the work herein detailed stands the test of confirmation, then the doctrine that shock is due to vasomotor exhaustion must be revised.

14. Roberts, W. O.; *Am. Pract. and News*, 1907, p. 24.

Note.—A complete bibliography of Shock up to 1886 may be found in G. H. Ghroeninger's "Ueber den Shock," Wiesbaden, 1885, from which we have quoted freely in the opening paragraphs.

SYPHILIS OF THE EXTERNAL EYE.*

By CASEY A. WOOD, M. D., of Chicago, Ill.

It is manifestly impossible to treat this subject with any approach to completeness in the short time at my disposal. Indeed, when one considers that the Alexander monograph (*Syphilis und Auge*), even at the time it was written, occupied some 150 pages of print for this purpose, it will be apparent that I shall be barely able to do more than mention the important sections of my subject and to place emphasis upon only a few points that I have come to regard as essentials.

To that end I shall say nothing of purely orbital lesions, or of lues of the extraocular muscles.

Alexander found 2.16 per cent. of all eye diseases to be luetic in character, and in spite of lower and still higher estimates by other authorities, that percentage may be regarded as substantially correct.

Syphilis of the Lachrymal Gland.—In my judgment, the chief gland of the lachrymal apparatus is more frequently the subject of lues than is generally believed. The diagnosis is not always easy, as the signs of its involvement are not generally prominent. Apart from swelling, slight tenderness and trivial impairment of function, one's attention is not often called to this exhibition of the disease, especially as it is usually associated with other manifestations of lues, and promptly recovers under the systemic treatment given the latter.

Syphilis of the Eyelid. Chancre of the lid, especially of the palpebral margin, also presents difficulties in diagnosis. These are by no means due to masked symptoms, but to the fact that the initial sore often simulates the appearance of a style, a suppurating marginal chalazion, dacryocystitis acuta, tubercle and vaccinia. However, when one sees an ulcer of the lid edge with an indurated base, sanious discharge, associated with enlargement of the corresponding preauricular (sometimes the submaxillary) gland, one may feel suspicious of the disease.

In this and other events of suspected luetic origin there are always the spirochæta and Wassermann tests—one or both—to render the diagnosis easy and certain.

I have little time to refer to the *modus infectionis* of this or other forms of external ocular lues but I may, perhaps, remind you that even in our country the domestic treatment of chronic "sore eyes" by the application of the lingual tip to the everted lids and intermarginal space is not unknown.

Gumma of the Lid. This is also a rare alteration of the tissues not

*Read before the Chicago Ophthalmological Society, April, 1909.

always easy of diagnosis, but it ought not to disturb anyone in view of our much improved laboratory methods of detection. The *spirochæta pallida* is always found in the new growth.

In a case under my care last year, considerable destruction of the lid tissues occurred before the character of the lesion was recognized.

Conjunctiva. As is generally the case with mucous membranes, we have primary, secondary and tertiary involvements of the conjunctiva. Chancre, gumma, mucous patches and other syphilides are described. In my opinion, these affections, although not common, are often overlooked, especially the patches. The latter may readily be mistaken for an "acute conjunctivitis with formation of a false membrane." Of course, the only way to avoid errors of this sort is "eternal vigilance" and a search for the *spirochæta*.

Sclera. The older ophthalmologists believed the sclera to be immune from attacks of lues and, as a matter of clinical experience, we know that syphilitic lesions of the sclerotic are very rare. It is even a question as to whether some, at least, of the published cases (Mooren, Galezowski, Higgins, *et al.*) were not really tubercular. In doubtful instances modern means of diagnosis are at hand to decide the question.

Tarsus. Tarsitis syphilitica is not, perhaps, as uncommon as some authors would have us believe. It is, however, almost always associated with lues of other parts of the eye. I have had at least two genuine cases that plainly showed the usual thickening, œdema of the lid skin and discomfort on opening and closing the eye that rapidly disappeared under inunctions of mercurial ointment, large doses of iodides and local applications.

Lachrymal Apparatus. As is well known, both acute and chronic dacryocystitis may be luetic, but the most pronounced cases are those in which the bony walls of the sac or the nasal duct are the seat of a syphilitic periostitis or osteitis associated with or directly producing stenosis. One should, of course, always suspect the presence of syphilis in this form of nasal duct obstruction.

Cornea. Although there are doubtless other varieties of luetic keratitis, yet that form known as interstitial, parenchymatous, specific or strumous keratitis furnishes by far the most common form of luetic invasion. The disease is too well known to all of you to waste any time on a description of it; but, let me say in passing, if there be any one in my audience who has chanced to miss the golden opportunity of reading the pages of MacKenzie on this portion of my subject, he should seize it at once. He will find there a description of the clinical aspects of the disease to which nothing of importance has been added during the past half century.

The process is almost always seen in children, is uniformly hereditary and affects the middle and posterior layers of the cornea—the membranes of Bowman and Descemet. It rarely leads to loss of the anterior

epithelium, and is characterized mainly by a deposit of new material with the formation of vessels in the corneal substance. It is very likely due to lues in 75 per cent. of all cases. The great variations (50 to 97 per cent.) in the estimates of observers of large experience will probably now be excluded in future by our modern means of diagnosis.

Although the disease is extremely chronic, it has been noticed that it generally affects at first one eye—to attack the other later on. Bearing on this point, I once heard in the discussion of the disease by a foreign medical society a bluff Englishman reply to a pedantic, little questioner, who challenged the audience to furnish cases in which the fellow eye had escaped: "Yes, I have had two cases," said he, "but in both patients the other eye had been enucleated."

The infiltration, commonly known as "salmon patches," may deepen and extend until the whole cornea is covered with a large, dense opacity. A short time ago I saw a case that had been pronounced one of onyx, and I must say that the appearances and symptoms seemed to justify the contention, but, as we know, suppuration or even ulceration is an extremely rare incident in syphilitic keratitis.

The search for "Hirschberg" vessels in suspected cases of hereditary syphilis, has not been insisted upon as a means of confirming a suspicion of this disease as strongly as I think its value warrants. When we have a sign so easy of demonstration, that persists through life and is so constant a reminder of the general dyscrasia, it ought to be more generally employed in diagnosis. The internist should be informed that, on dilating the pupil and with the use of a lens, the vascular outlines can be readily distinguished in quite a few cases of hereditary syphilis.

Although Hutchinson and other authorities believe in the specific treatment of these cases I must confess that after many years of experience I have come to the conclusion that, on the whole, the use of mercurials and iodides is of little or no use. Indeed, I am convinced that thoroughness in the prescription of most of these remedies is harmful rather than helpful. Attention to hygienic measures—an outdoor life, change of scene, good food, tonics and the regulation of the patient's habits—are usually of much more importance. Even the syrup of iodide of iron, that is so often prescribed, owes its good effects, I believe, to the iron rather than to the iodine. Locally, it is manifestly difficult to lay down any general line of treatment. The pupil should be kept dilated with atropine, owing to the probability of iritis setting in sooner or later, and the acute symptoms (when any are present) should be combated by it, combined with hot applications and dionin. When the acute stage has passed, I have found digital massage of the cornea, with stimulating ointments, of some considerable benefit in producing absorption of the corneal deposits.

Both in consideration of treatment and of prognosis it must be remembered that behind the opaque cornea a uveitis may be going on that

can, in the course of weeks, or months, destroy the eyesight. Consequently, in all cases of interstitial keratitis one should inform the patient's friends that while the opacity in the cornea generally clears up and the patient often obtains useful vision as a result, the choroid, retina, optic nerve and other important internal structures of the eye may be so damaged that even if the opacification in the anterior segment subsides, the patient may yet be partially or completely blind from ravages of the disease in the posterior segment.

PERFORATIVE APPENDICITIS COMPLICATING PREGNANCY. WITH REPORT OF TWO SUCCESSFUL CASES.

By EDMUND A. BABLER, M. D., of St. Louis.

Recently three cases of perforative appendicitis complicating pregnancy have come to my notice. One of these was referred to my service at the Deaconess Hospital; the other two occurred in the practice of my colleagues. Of these latter, one was not operated upon; death occurred. One patient was subjected to Cæsarian section; a dead fetus was delivered; mother died.

In a previous issue of the *Journal of American Medical Association* (October 17, 1908, page 1310), I reported my first case and gave a tabulated report of all recorded cases. A brief synopsis of my first case follows:

CASE I. Mrs. S., aged 29, of Sapulpa, Oklahoma, was seen in consultation with Dr. Soliss. Examination showed patient in sixth month of pregnancy; a large appendiceal abscess was present. Patient was in quite good condition. Abscess was incised and drained. Forty-eight hours after operation patient miscarried. Infant lived a very short time. Mother made a complete recovery.

In the monograph referred to, the following conclusions were advanced:

1. Perforative appendicitis is one of the gravest complications of pregnancy with which the surgeon has to deal.

2. Appendicitis complicates pregnancy with greater frequency than the tabulated cases would indicate.

3. Pregnancy does not seem to predispose to primary appendicitis. It may precipitate an attack in certain chronic cases.

4. The clinical manifestations do not differ from those of appendicitis in the non-pregnant.

5. Before a diagnosis is made, the medical attendant must bear in mind the possibility of ureteritis and pyelitis. The diagnosis is not, as a rule, difficult.

6. Of 235 cases of appendicitis complicating pregnancy and the puerperium, 103 of the 207 cases complicating pregnancy were of the perforative variety. Of these perforative cases, 89 patients were operated on; 33 aborted before and 37 after operation; 36 mothers died.

All of the 14 patients who were not operated on in perforative cases died; 9 infants died. Of the 104 non-perforative cases, 50 patients were operated on; 7 aborted and one mother died. Of the non-perforative, non-operated case, 6 patients aborted and 4 died. (These were mild attacks.) Of the 28 cases occurring during the puerperium 18 were

perforative. Of these latter, 12 patients were operated on; 4 died. Two of the five not operated on accidentally recovered; the abscess ruptured into the rectum. All of the patients in the non-perforative cases recovered.

7. The morality of appendicitis complicating pregnancy is the morality of delay.

8. Early, efficient surgical intervention is the secret of success in the treatment of appendicitis complicating pregnancy.

9. It is far better to evacuate an appendiceal abscess before emptying the uterus, since such a procedure would eliminate the possibility of flooding the free peritoneal cavity with pus.

10. If general peritonitis is present at time of consultation, accouchement force, followed by abdominal section, is indicated in the cases near the end of gestation. Cases have been reported in which general peritonitis was present at the time of operation, and yet the patient went to term.

CASE II. Mrs. H., aged 27, was referred to my service at the Deaconess Hospital by Dr. Lewis. She gave the following history: Mother of four healthy children; last confinement occurred three weeks ago. During eighth and last months of pregnancy she had frequent attacks of more or less severe excruciating pain in right inguinal and umbilical regions. The pains were cramp-like in character and were always to right of median line. The midwife whom she consulted stated that she had ovarian trouble. On the day of confinement the pains in right side of abdomen were excruciating and the attacks more frequent than those previously experienced. Immediately after delivery she suffered a chill, followed by a temperature of 104. On the day following delivery, a second chill followed by vomiting, abdominal distention and high temperature, were noted. The family physician was then called. The illness progressed from bad to worse until the end of the third week when I saw her.

Examination of patient revealed her to be in a septic condition; complexion waxy; pulse rapid and weak; temperature 102. A semi-solid, painful mass about as large as a cocoanut was found in right inguinal region; bimanual examination revealed mass to be immovable; uterus seemed to be drawn upward and toward the right. Just over the left half of sacrum was found very painful, fluctuating mass as large as two doubled fists. There was a leucocytosis of 13,580. Urine contained slight amount of albumin.

The abscess in region of sacrum was incised under local anesthesia, and about a pint of slightly offensive pus was evacuated. After evacuation of this abscess, the mass in right inguinal region did not become any smaller. I did not believe that there was a connection between the two.

Two days after entrance into hospital patient was etherized and a median laparotomy performed. A peculiar condition of affairs was found. In the right inguinal region was an oval, semi-solid mass as large

as a cocoanut. The uterus was drawn upward and to the right and formed the inner wall of this mass. The head of cecum was lost in the mass. The right tube and ovary assisted in forming the inner wall of sac. The left tube and ovary were apparently normal. The mass was adherent to the abdominal wall just below McBurney's point. Gallbladder was free from stones. The cul-de-sac was free from abnormal content. I felt sure the mass in right inguinal region was an appendical abscess.

The median incision was immediately closed in layers. An incision was then made just above and an inch internal to anterior superior superior spinous process of right ileum. The pus sac was incised and contents evacuated. A large drainage tube was inserted, dressings applied and patient returned to bed. Normal saline solution was administered per Murphy technique. The patient rallied better than we anticipated. Median incision healed by primary union. The two pus cavities discharged for several weeks; they were irrigated daily after operation until the discharge had almost disappeared. Patient left the hospital four weeks after operation. It is now three months since the patient left the hospital. She is in excellent health.

My second case exemplifies the possibilities of nature. Further experience has but tended to confirm the correctness of the conclusions advanced in my previous monograph.

SPECIAL ARTICLE.

INDISCREET CHAPTERS IN HISTORY.

(Les Indiscrétions de l'histoire.*)

By DOCTEUR CABANES.

Translated by Dr. Philip Skrainka.

CHAPTER I.

LOUIS XI.

JUDGED BY HISTORY BUT EXPLAINED BY THE SCIENCE OF MEDICINE.

In the year of Grace 1463 "the stone-cutters and sculptors worked in marble and stone, under the gallery of the court-yard of the Lion's Fountain, on the monument of the late King Charles, dead in the palace of the queen near the palace of St. Paul."** Charles—it was Charles VII.—had been dead already two years; but the delay in fashioning his monument can easily be explained when one recalls that during his life no one had dared to mention its plans and cost to him. For the son of Isabeau of Bavaria had inherited from his mother obsessions and phobias that could not fail to aggravate the sort of life he led. This royal neuropath, this agoraphobic and anthropophobic, was hypersensitive as regards motives; he apprehended the slightest cause of an emotion, and the one that he most dreaded was the thought of death, fearing always, says one of his historians, "to die by the sword because he was present at the death of Duke Jehan (John the Fearless)," massacred under the eyes and at the instigation of the Dauphin who later mounted the throne of France. This tanatophobia, or as we should say the better to be understood—this panophobia of Charles VII. recurred in his son, the future king, Louis XI.

* * *

Louis XI. is a sovereign who to be understood must be judged from the standpoint of psychiatry. Mental pathology reclaims this crafty monarch, for if he is an enigma in history it is because history has thought itself capable of doing without the aid of medicine.

More than any other holder of the sceptre, Louis XI. lends himself

*Paris: Albin Michel. 1909.

**Sauval, *Antiquités de Paris*, t. II., p. 373; following the customary reports of the provostship of Paris.

to analysis, though at first sight he seems to defy it on account of the mélange that he presents of a perfect surety of decision, an inexhaustible activity, and a stupefying amorousness, with manifest propensities to the strangest beliefs and the most absurd practices.

"This statesman, so reflective and penetrating, this ingenious and cunning mind, so sensitive and acute, believed nothing except what he



wanted to believe, neither moral laws nor conscience; nevertheless he had faith in the most ridiculous superstitions peculiar to coarse and ignorant men. His religion was decidedly inferior to that of the Middle Ages, and like the old Merovingian kings in barbarous times, he made his vows to the Virgin and the Saints of Paradise, by bestowing the richest gifts on the churches which were dedicated to them, in the hope of gaining their support in his most dishonest enterprises. Mindful of

his mental independence even in his superstitions, he did not submit to the least influence on the part of the clergy.”*

Have we here sufficient evidence to class one of the greatest kings of which France boasts in the category of the semi-insane? Should our deduction be that at certain moments Louis XI. had a veritable “intellectual functional miopragia?” All depends on the significance of the term semi-insane, which, thanks to Grasset, has to-day quite an unexpected vogue. Let it pass for semi-insane, if by semi-folly we understand “the inequality in the development of divers psychic centers;” if we admit that these semi-insane are capable of rendering to society better service than the more ponderous brains, and better equilibrium than is ordinarily considered normal. As regards the men who have manifested a psychic activity of which history has offered some extraordinary examples, is it not good logic to reason that “when some cerebral centers work exaggeratedly, others must weaken; the first draining a quantity of blood from the latter, which thereby suffer from deprivation?”**

* * *

Son and grandson of neuropaths, Louis XI., by virtue of the laws of morbid heredity, was fatally dedicated to neuropathy, if heredity is the intangible dogma which is to-day accepted without reserve.†

Leaving aside all anamnesis, whether hereditary or personal, let us attempt to establish the psychic formula of this king who is ordinarily pictured in history as a cruel despot without scruples, and who was—there is too great a tendency to forget it—one of the founders of French national unity.

To appreciate the mentality of a sovereign, such as was that of Louis XI., it would be well to note, at first, the physiological therapeutics of the time as well as the medieval pathology, before sitting in judgment on the case in the light of modern neuropathology. By reason of the adage *naturam morborum ostendunt curationes*, would not a knowledge of the treatment inflicted on the royal patient help us to ascertain beyond a doubt the nature of the malady which afflicted the king? This method, be it said, has verified the hopes which were advanced,†† and the results are worthy of record.

* * *

During the year preceding the last of his life, Louis XI., who clung desperately to life despite the fact that many remedies had not helped him, thought it would be beneficial to receive a visit from the shepherds of “the country of Poitou,” and from another district where “a great number of bigots of both sexes, and people of devotion as well as hermits and saintly creatures, had unceasingly prayed to God to spare

*Henri Martin, *Hist. de France*.

**J. Daufaur, *la Névrose de Louis XI.*; thèse de Toulouse, 1907.

†Quelques résultats de l'examen des preuves historiques employés par les auteurs traitant de l'hérédité, par le docteur Nægeli Akerblom, 2^e édition. Genève, 1905.

††This is mentioned by Aug. Brachet in his very remarkable work on the “Pathologie mentale des rois de France.”

the king's life."* The presence of the hermits needs no explanation, but what function did the shepherds fulfil?

The same chronicler continues thus in the passage from which we quoted only a part: "At this time the king received a great number of players of low and sweet instruments, whom he lodged at St. Cosme near Tours, where they assembled to the number of one hundred and twenty." The shepherds often played before the king's lodgings "in order that the king would derive some pleasure and pastime, and *to keep him from sleeping*." Do not we glean clearly from this text what has since been recognized—namely, the moderate and sedative, and at the same time, anti-hypnotic action of music? or, in other words, a prophylactic of diurnal sleep? Does not all this signify the necessity of the precaution of resorting "to low and sweet instruments" in the therapeutics of nervous maladies, since, on all hands, we have evidences to-day of the beneficent influence of melodies in a minor key?***

* * *

Two years before trying musicotherapy, there were ordered by the king from different parts of the country, notably from Provins, Montbazon and other places, messengers charged to bring roses, mint, rosemary and sweet marjoram, violets and eglantine, in order to paper with them "the chamber and the retreat" of the king. Now the Arabic doctors,† as well as those of the Middle Ages,†† recommend against melancholy and epilepsy the use of odoriferous plants.

Was Louis XI. afflicted with epilepsy (morbus comitialis)? Such a conclusion would be premature. But various documents attest that the royal invalid had submitted to cauterizations by the red-hot cauterium and encephalic scarifications for attacks of vertigo, of which he was the victim. Of what nature were these attacks of vertigo? The royal patient was given potable gold,‡ medieval medicine prescribing it in psychoneuroses, and now reinstated in our pharmacopeias as an antispasmodic. If we note that the king followed the hygienic directions of his doctors against spasms,—that is to say, he slept with his head lying high and had it protected in order to avoid a coldness of the cranium, because this state was inductive of sleep,—we shall be nearer an understanding of the morbid cause which we have touched upon. It was in fact on the authority of Hippocrates‡‡ that the notion arose in the time of Louis XI. that sleep in excess was a provocative cause of epilepsy;

*Journal de Jean Roye ou Chronique scandaleuse, éd. de B. de Mandrot, t. II., p. 122, ann. 1482.

**This has been confirmed by modern physiologists (Binet et Courtier, la Vie émotiionnelle; Labor. de Psych. physiol., 1897, p. 104).

†Avicenna, Canon Medicinæ, libellus de removendis nocementis, vols. I. and II.

††Bernard de Gordon, Lillium medicinæ, II., 25

‡Therefore, thou best of gold art worst of gold;

Other, less fine in carat, is more precious.

Preserving life in medicine potable.

—Shakespeare, Henry IV. (Translator).

‡‡Hippocrates, Works, édit Littré, vol. V.

hence, an epileptic should not fail to have his head well covered. The favorite prescription, moreover, in this malady, was to use means to warm the brain and keep it dry; from which arose the necessity of cauterization so as "to vaporize the humors."*

* * *

The king then had only conformed to a current practice for the cure of epilepsy. But all the remedies which were administered remained useless; in vain were new medications employed. "Day after day Louis grew worse and no profit was his from the medicines administered in a marvelous manner."** Desperate and heroic measures were called into play "because the king vehemently hoped to acquire health by means of human blood, which he sucked and drank from infants." Are these "the terrible and marvelous medicines" of which certain annalists speak in no dubious way? and which others have passed completely over in silence and for very good cause? Was this a caprice on the part of the patient or a sign of sanguinary sadism? Did he wish to regain youth or a restoration of his declining strength? Who can reckon the number of fantastic interpretations which may thus be demonstrated!

Whether we prejudge, or whether we draw inferences from these observations, the fact is unvarying; in antiquity,† and in our days,†† human blood that is still warm is thought by the laity to be a cure for epilepsy. Opening a pharmacopeia of the eighteenth century,‡ you may read there: "All the authors recommend human blood in the cure of epilepsy." Hence, the clinician is able to decipher what has remained a closed chapter to the physiological as well as to the dogmatic historian.‡‡

*Guy de Chauliac, édit. Nicaise, 1890, p. 593; Albucasis, trad. Leclerc, 1861, etc.

**Robert Gaguin, édit., 1560, ann. 1482, fol. 281.

†—Celsus, 111., 23; Pliny, XXVIII., 2.

††*Le National*, of May, 1845, published an account of the execution, at Stockholm, of a man condemned to death, noting in particular the torment of an old woman who, afflicted with epilepsy, stood at the foot of the scaffold ready at the moment the head was separated from the body, to thrust into the blood, while yet warm, a morsel of bread, the eating of which she hoped would cure her.

‡*Pharmacopée royale, galénique et chimique*, par Moyse Charas, édit. de 1773, vol. II, p. 418.

‡‡See particularly Anquetil, Lacretelle, Henri Martin, Michelet, etc.

(TO BE CONTINUED.)

MEDICAL AND SURGICAL PROGRESS.

THE SURGICAL TREATMENT OF THE PARALYSES.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

1. A COMMUNICATION ON NERVE SURGERY, WITH A PRELIMINARY REPORT ON THE ANATOMICAL HEALING OF NERVE WOUNDS.—Bardenheuer (*Deut. Zeitsch. f. Chir.*, 1908, XCVL., 24).
2. TREATMENT OF CEREBRAL PARALYSIS.—Rothmann (*Ther. der Gegenw.*, May L., No. 5, pp. 217-264).
3. A NEW OPERATIVE METHOD OF SPASTIC PARALYSIS BY MEANS OF RESECTION OF THE POSTERIOR SPINAL NERVE-ROOTS.—Foster (*Zeit. f. orthop. Chir.*, XXII., Bd. 1-3, heft, 1908).
4. SUCCESS IN THE TREATMENT OF GRAVE INFANTILE PARALYSIS.—Vulpus (*Muench. med. Woch.*, 1908, p. 2662).
5. NERVE TRANSPLANTATION.—Kuettner (*Deutsch. med. Woch.*, 1908, p. 2196).
6. THE TECHNIC OF ARTHRODESIS OPERATIONS.—Bade (*Zeit f. orthop. Chir.*, XXII., B. 1-3, 1908).

Bardenheuer's paper is based upon the experience gained in the treatment of 43 cases in which he operated upon the nerves, 8 of these being plastic operations. He believes that nerve defects are bridged over chiefly through the outgrowth of fibrillæ from the central stump. In order that a nerve may have its function, its continuity with the ganglion cell and its nourishment by blood are necessary. Wherever there exists a circular constriction of nerves and blood vessels from non-inflammatory cicatricial tissue, the conductivity of the nerve is interfered with. Conductivity is also impeded when there is marked and continued pressure upon nerve fibres. Pressure is dangerous when the nerve cannot escape; that is, when it works concentrically upon the nerve and arrests the influence of the ganglion cell. Here degeneration of the peripheral portion follows. Inflammatory material and extravasated blood will produce this pressure. It is highly important to promote good circulation of blood in the region of effected nerves following an operation. The author has found that function may return in from 5 to 20 days. This is exceptional, and suggests that there is probably a previously established anastomosis between the peripheral stump and the neighboring nerve, or between two nerve stumps. Though healing appears to take place clinically by first intention, it is impossible to demonstrate this histologically. Transplantation of entire nerves or by nerve flaps from an intact or slightly paralyzed nerve will often give return of function. It is also advisable to transplant from a sound nerve, the function of which

is not important. For instance, the hypoglossal is to be preferred to the spinal accessory and the obturator to the crural. It is well also to transplant tendons and shorten paralyzed muscles as well as to cut sound muscles and tendons as an aid to the nerve grafting. In this connection, too, it is well to shorten muscles so that they will be left taut and will contract upon the slightest voluntary impulses. In old traumatic paralysis, with node formation at the site of the lesion, the electrical examination must decide the treatment after exposure of the nerve. If there is no reaction to electrical stimulus on all sides of the node, then the node should be excised and the cut ends sutured together. When reaction is present, an incision should be made through the sheath of the nerve, the blood clot removed, and the nerve sheath sutured. After excisions of the elbow, hand and knee, there may occur without injury to a nerve or ischemic palsy from a tourniquet, an almost complete paralysis of the muscles. This is due to too great shortening of bones and the relatively too great length of muscles, resulting in a lack of nourishment of nerves. The author believes that all nerve pressure palsies should be operated upon in two weeks' time after the onset of paralysis where the nerve gives the reaction of degeneration. It is possible then to free the nerve from hematoma or to cure its lesion. Suture should be made directly through the nerve with fine cat gut. Restoration of function after nerve operations may be a matter of a few weeks, months or years.

Rothmann, in his article on the treatment of cerebral paralysis, says that there should be three phases to the treatment: First, treatment should be directed against the incipient flaccid paralysis; secondly, it should aid the restoration of motor functioning, and finally, should be directed against what is left of hemiplegic paralysis. The head should be kept still for a few days after the stroke and the position of the arms and legs should be carefully overseen. These individuals have a tendency to turn on the paralyzed side and thus compress the paralyzed members. This should be prevented and the limb should be subjected to passive movements from the very beginning. Massage helps materially in promoting the process of restitution, and as soon as active movements have appeared they should be exercised guardedly and should be extensive, coördinated ones, not single movements. Stimulation of the cortical vasomotor centre, cultivation of still existing connection with the cortex and of the innervation of different groups of muscles of the arms and legs, lead to good results following cerebral paralysis. This article is of interest in its suggestions as to the earlier treatment of cerebral paralysis. Foster's paper takes up the treatment of these conditions in their later stages, and his suggestion is one of considerable importance. His operation is based on the fact that in spastic paralysis we have a pathologic intensification of the reflexes, originating in a sensory irritation of the skin, joints, ligaments and especially the muscles. These pathologic influences pass from the posterior nerve-roots into the gray matter and thence into the anterior horns and the reflex is completed through the motor nerves into the muscles, thus fixing the limbs in their position and resisting stretching. This condition is present in the normal, but the normal fixation is less marked because the cortex continuously exerts a restrictive influence through the pyramidal tract on the spinal reflexivity. Where this influence is inhibited the spinal reflexivity reaches an extreme degree. His proposition is to suspend the spastic contracture by dividing a link in the reflex arc, this means sections of the posterior nerve-roots, as the peripheral nerves contain sensory fibres and the spinal cord is an inoperative field. The technic of

operation consists of laminectomy from the second to the fifth lumbar vertebrae and the beginning of the sacral lamina, of opening the dura and resecting the proper nerve-roots.

Following this suggestion Professor Tietze has operated upon 4 cases: The first was a marked paraplegia as a result of a congenital bilateral defect of the upper third of the central convolution. The result showed the disappearance of contractures and about normal passive movability. The second case was Pott's disease of the cervical vertebra. The result here was not so good as the first case. The third case was one of Little's disease with resulting improvement. The fourth case died from an injury done the cauda equina.

Vulpus has demonstrated 12 cases of severe infantile paralysis which he has treated by myomectomies, osteotomies, arthrodesis, transplantation of muscles and tendons, excision of bones, etc. Operation proved of advantage in all of these cases, and Vulpus is of the opinion that no case is too severe to be operated upon as several of his cases were only able to move themselves by their arms. These he enabled to walk upright. It is his opinion that fixation apparatus should be used as an adjuvant to operative methods.

Kuettner has taken a piece of the peroneal nerve and tibialis from an amputated leg and transplanted it into a median nerve after excision of a tumor of the median nerve. The result was a recovery.

Bade has written a paper on the technic of arthrodesis giving as general considerations; first, proper asepsis, and second, proper approximation of bone. Shortening should be avoided as much as possible when the knee is operated upon. The foot is not of necessity to be completely anklyosed. He favors a small amount of motion here as it gives a more or less elastic gait, but the arc of motion must not be sufficient to permit the foot to drop back into equinus.

THE TONSIL QUESTION.

A REVIEW OF RECENT LITERATURE.

By WM. B. CHAMBERLIN, M. D.

The question of the advisability of removing diseased tonsils seems to have been definitely settled. The method of removing them of late has claimed no little attention, as is shown by a perusal of the more recent literature. For years the operation of tonsillotomy, *i. e.*, the removal of the part projecting beyond the faucial pillars, was the operation of universal choice; but of late this older operation seems likely to be supplanted by the more modern and to us more surgical operation of tonsillectomy. This change in attitude seems to spring from satisfactory and logical reasons.

Tonsils may be pathological simply from their size alone, interfering with respiration, deglutition and the proper aeration of the tympanic cavity. Such tonsils are seen most frequently in children where they are usually associated with marked increase in the adenoid tissue or Lushka's tonsil. They occur less frequently in adults. But it is not always the hypertrophied tonsil which carries with it the greatest menace to health and danger to the individual. Often the imbedded and densely adherent tonsil is the tonsil of greater danger. It is the portal of entry of bacteria of all sorts, especially the tubercle bacillus, as has been shown by the investigations of Wood, Ravenel and others.

The tonsil is bounded fore and aft by the pillars of the fauces and externally by a dense fibrous capsule which rests upon the superior constrictor of the pharynx. The crypts are eight to twenty in number. They open on the internal and superior surfaces and pass for the most part to the capsule.

Why should the older and simpler operation of tonsillotomy give way to the more recent and infinitely more difficult operation of tonsillectomy? The operation of tonsillotomy is incomplete. We might liken it to an appendectomy in which only the distal part of the appendix is removed. Recurrences of inflammatory attacks following such an operation are common, so that patients have grown skeptical in regard to the benefits derived from the operation while operators have grown more guarded in their promises as to ultimate cure. If the tonsil is large and not adherent to either pillar it might be possible to remove it in its entirety, gland including crypts and capsule, with the tonsillitome. But such a tonsil is a *rara avis*. The infinitely greater number, as the result of one or several attacks of inflammation, are adherent in varying degree to one or both pillars. The part projecting beyond the pillars constitutes but one-eighth to one-half of the entire gland. It may in the quiescent state following an attack of tonsillitis not project beyond the pillars at all. In such cases the tonsillitome would remove but a small part of the diseased gland—it might fail to remove even a small portion. With

seven-eighths to one-half of the tonsil remaining *in situ* after tonsillotomy, it is little wonder that patients suffer from recurring attacks of tonsillitis following operation. The surface becomes sealed over with bands of cicatricial tissue and the patient, according to Jackson, is more disposed to attacks than before.

The true size of the gland is often surprising. This may be revealed by traction on the tonsil, or by causing the patient to gag. After the removal careful examination will show whether the enucleation has been complete or not. The capsule should be intact and a probe introduced into any of the crypts should not pass through, but should stop at the capsule. The fossæ should also be examined carefully to see that no tags of tonsillar tissue have been left behind.

Tonsillectomy, like tonsillotomy, can be performed under general or local anæsthesia. Under local, the tonsils are first painted with pure cocaine dissolved in adrenalin until superficial sensation is abolished. A few drops of a one per cent. cocaine solution, to the drachm of which five to ten drops of adrenalin have been added, is then injected outside the capsule by plunging a special long hypo needle through the pillars. Anæsthesia and anæmia are complete almost immediately.

For general anæsthesia ether is safest and should be the anæsthetic of choice, notwithstanding its disadvantages of nausea and increased flow of saliva and mucus. The mouth should be held open by a suitable gag. The operation may be performed with the head on the side or hanging over the end of the table in the Rose position, while the operator sits facing the top of the patient's head. My own preference is for this position. The tonsil is seized on its anterior surface and some traction exerted. This will give one an idea of the true size of the gland and will also differentiate the anterior pillar. By means of scissors, straight or curved, an incision is made through the overlying mucous membrane just inside the pillar until the glistening white capsule comes thoroughly into view. By means of scissors, or largely by blunt dissection, the tonsil is now freed from its lateral and superior adhesions until it is attached externally by a narrow pedicle covering its lower two-thirds. While the tonsil is drawn well into the throat this pedicle is then severed by knife, scissors, tonsillitome or snare. The snare possesses the advantage of following close outside the capsule and causing less hemorrhage. Jackson condemns its use on the grounds of there being greater danger of secondary hemorrhage, but the snare seems to be gaining in favor with an increasing number of operators.

The chief objections to the complete enucleation are the difficulties attending the operation and the greater danger of hemorrhage. That the operation is difficult cannot be denied. This, however, can hardly be urged as an objection, if the necessity of removing the entire gland is truly appreciated. It should remove the operation from the hands of the ill-prepared and incompetent and place it in the category of operations requiring special skill and training. Such an operation requires first of all a good operator, second a good assistant and preferably adequate hospital facilities. The danger of hemorrhage has been too little appreciated in tonsil surgery. Any operator attempting to do such work should expect an occasional hemorrhage and be prepared to cope with it. Most operators are now agreed that the danger is fully as great in the one case as in the other. In tonsillectomy the point of safety lies in keeping close to the capsule and in not encroaching upon or lacerating surrounding tissue.

CONCLUSIONS.

I. Tonsillotomy may give relief in certain cases, but tonsillectomy offers the greatest promise of cure.

II. There is no greater danger of hemorrhage in tonsillectomy than in tonsillotomy. There is always a danger of hemorrhage in any tonsil operation.

III. Any method is a good one so long as it aims at complete removal. The choice of method is largely a question of individual skill or preference.

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PSYCHO-ANALYSIS AND ASSOCIATION TESTS IN THE TREATMENT OF NEUROSES.

A REVIEW OF RECENT LITERATURE.

By SIDNEY I. SCHWAB, M. D.

1. PSYCHO-ANALYSIS IN PSYCHOTHERAPY.—Jones (*The Jour. of Abnormal Psychology*, Vol. IV., No. 2).
2. THE PRACTICAL VALUE OF THE ASSOCIATION TEST.—Bailey (*The Amer. Jour. of the Med. Science*, September, 1909).
3. A CASE OF SCHIZOPHRENIA (Dementia Praecox), AN ANALYSIS.—Brill (*The Amer. Jour. of Insanity*, Vol. LXVI., No. 1).
4. DIE VERWERTBARKEIT DES ASSOZIATIONSVERSUCHS FÜR DIE BEURTEILUNG DER TRAUMATISCHEN NEURISEN.—Potozky (*Monat. für Psychiatrie und Neurologie.*, June, 1908).
5. UEBER ASSOZIATIONSUNTERSUCHUNGEN, BESONDERS SCHWACHSINNIGER KINDER.—Wimmer (*Monat. fuer Psychiatrie und Neurologie*, February, 1909).

What seems to be the most important advance in the knowledge and treatment of hysteria and allied conditions is to be found in some of the recent work on these subjects. The papers are largely the outcome of Freud's earlier work on hysteria. The psychotherapy, of which so much has been written and which has been so largely read, represented at first a crude form of therapy easily appreciated by both physician and layman. It was, and is, a surface therapy concerned little with underlying causes which are hidden from superficial examination. It had largely to do with the attempt to modify conditions as laid bare by a patient's open recital of such facts as appeared to him to be at the bottom of his trouble. This data obtained largely by means of direct questions and answers, a free confession as it were, formed the only object of therapeutic attack open to the examining physician. That there was a much more intricate process underlying the systematic picture of many of the neuroses was long admitted, and it was likewise believed that if this hidden territory could be reached then the most effective therapy could be applied. That psychical symptoms were the result of a largely involved and little understood mechanism has always been believed, and the first step towards unraveling the problem seems now to have been reached. Neurological literature at present contains many papers on psycho-analysis and association test experiments, and it is the object of this review to mention a few of the more interesting in which these subjects, now becoming very familiar, are dwelt upon.

Ernest Jones (1), perhaps the foremost advocate of the advanced schools of psychotherapeutists in this country, in a paper read before the American Therapeutic Society, explains very clearly how from the original Freud hypothesis, advanced some fifteen years ago, has developed a system of therapeutics, which is without question an enormous

addition to our power in the treatment of this class of disease. By means of psycho-analysis a deeper insight is sought into the essential nature and origin of the morbid phenomena with a view to obtain a fuller understanding of the aims of treatment, and so achieve a greater precision in the application of it. The method is based on the knowledge that the symptoms present in the psycho-neuroses owe their origin to a conflict between two groups of ideas or mental processes which cannot be brought into harmony with each other. One complex of mental processes is for some reason or other of such a kind as to be unacceptable to the main body of the personality. The personality fails to assimilate it, will have nothing to do with it, tries to forget it, to submerge it, to repress it. The repressed complex then takes on an automatic existence, and acts as an irritating foreign body in the same way as any physical foreign body that has not been absorbed. From this point of view we may define the pathology of the psycho-neuroses as a defect in assimilation. In fact, enabling the patient to discover and appreciate the significance of the mental process that manifests itself as a symptom, is the central aim of the psycho-analytic method.

Pearce Bailey (2), in a paper entitled "The Practical Value of the Association Test," describes in a very clear way the place which this method takes in connection with the previously described psycho-analysis of Freud. The association test or experiment was converted into a practical aid in diagnosis when Jung described that a lengthening of the association time gave a clue to the subject's past emotional experiences. Of course, prior to Jung's use of this method, association tests of various kinds were performed, especially by the students who had worked under Wundt; but the point of practical application came into the experiment when it was found that words associated with past and very often forgotten experiences connected especially with strong emotional tone would delay the associated word in a very definite and marked manner. The method is as follows: A list of one hundred words is printed on a pad and so distributed that there is an alternation of nouns and adjectives, and every fourth word a verb. These words are printed in a vertical column, and between every three or four of them a space is left, so that if there seems to be a need of a word not on the printed list, it can be written in. Each word is numbered, so that it can be referred to by number without pronouncing the word. On the same horizontal line as the number and the word three spaces are left—one for the time record, one for the reaction word, and one for the reproduction, or the response which is given on the second trial. If the reproduced reaction is identical with the original reaction, it is indicated by +. The method is explained to the patient, and the words are then read to him. This may be done by the physician, but is better done by some third person. The association time is taken by a 1-5 second stop watch, and it and the reaction word, or the first word spoken by the subject in response to the stimulus, is entered in the space reserved for it. The second trial, or reproduction, generally necessary for suspicious words only, should be delayed for at least twenty minutes. Failure to reproduce has been shown to be evidence that the stimulus word has touched upon a complex. The sheet containing all the facts becomes a permanent record. The test gives its most brilliant results when it brings to light an emotional experience which is no longer a factor in the conscious life of the individual, but which, nevertheless, has started a chain of persisting symptoms. Ordinary history taking can hardly hope to reveal such buried psychic causes.

By means of the association tests hints as to the past emotional experiences of the patient can easily be obtained, and by following these up by the analytic method of Freud it is possible to unravel and discover the origin of symptoms that would otherwise remain obscure. It is not necessary in order to make use of these two methods to accept fully Freud's theory that sexual traumas in childhood are the main-springs of hysteria; but Freud's teachings have been of great value in pointing out that painful emotional experiences in children are responsible for many neurotic symptoms which can only be overcome when the cause of them, long since perhaps passed from conscious memory, has been fully brought into consciousness.

Bailey (2), in his article describes a number of interesting cases in which the association test plus the analytic method brought the physician into absolute touch with the origin of the symptoms. The association tests are based evidently on so deep-rooted a psychical law that Jung believes firmly that the facts brought out by its employment cannot be affected by fraud and malingering. In this way the test can be used to unravel the origins of symptoms which the patient himself may try his utmost to conceal. Jung's original case was a medico-legal one, and the association experiment aided in the proof of stealing.

A. A. Brill (3) submitted a case of dementia-praecox to a psycho-analysis, the main features of which were dullness, apathy, somnolence, and perhaps hallucinations, as shown by the patient asking for a white horse. This condition continued for four days, after which he gradually became brighter. At the end of a few days he was apparently his former self. He was discharged from the hospital and went home, with the diagnosis of dementia praecox. In the ordinary run of such cases, in most of our insane hospitals, such facts would be left standing without any attempt at explanation, and according to the school of Kraepelin, the individual side of such a case would not be considered worth while investigating. It is obvious that if we are to understand anything at all of symptoms in mental diseases, it must be by some means of getting at the origin of delusions and other features common to this class of cases. In this case in point a hundred associations were taken and they formed the basis of further analysis by the Freud method. In an abstract of this kind the details of this investigation can not be given, but it was found that by following the associative words, the utterances of which were prolonged in the association test time, it was not a very difficult matter to reach the origin and the development of the whole hallucinational and delusional symptoms group. Brill concludes his paper by stating that after the analysis had cleared up the symptoms of this patient's condition and utterances have a reason for following the same course as that of any normal individual. Indeed, those who make use of the psycho-analytic method are well aware of the fact that whenever the patient's mind can be entered, he ceases to be an enigma and his senseless actions and utterances cease to appear senseless. On the contrary, we are often struck with the purposeful ingenious construction of the whole scheme. An interesting further conclusion of Brill is that in that class of cases in which the diagnosis of dementia praecox has been made, and which are mentally alert enough to be investigated by these methods a closer study has shown practically no trace of dementia. It is for this reason that the Zürich School, chiefly through the work and influence of Prof. Bleuler, repudiates this meaningless term "dementia praecox" and uses instead "schizophrenia."

Carl Petosky (4) makes use of the association test in the determina-

tion of traumatic neuroses. He submitted a number of cases to the association test and comes to the conclusion that it is of great value in determining traumata in cases of suspected traumatic symptoms, whether they are the result of malingering or not. It certainly seems a great aid in this class of cases if we can determine the truth in regard to the reality of the symptoms.

and can exclude malingering in cases where there is a strong motive in the way of damages.

August Wimmer (5) writes interestingly on the subject of association test in cases of mentally deficient children. This paper contains a great many interesting psychological experiments, in which the laws of mental association are carefully studied. The author finds a very marked difference between groups of normal children and groups of mentally deficient children.

CORRESPONDENCE.

PARIS LETTER.

By AUGUSTE A. HOUSQUAINS, M. D.

IS SYDENHAM'S CHOREA AN ORGANIC DISEASE?

At the Congress of French alienists and neurologists, which recently held its sessions at Nantes, the question of chronic chorea was made the object of very interesting communications and discussions. Especially were the differences and analogies which either separate or bring closer together Huntingdon's chronic chorea, and the chorea of infancy or Sydenham's chorea, subjected to the light of criticism. The former, recognized to-day as an organic malady, depends above all on diathesis and heredity; while the latter is to some extent considered accidental. Many authors regard Sydenham's chorea as a neurosis. Such, however, is not the opinion of M. André-Thomas. Though proof of its organic nature, says he, is not as easy to show as in chronic chorea, the neurosis of Sydenham's chorea ought not to stand, for any length of time, in the way of the conscientious examination of facts. The arguments advanced by M. André-Thomas in support of his thesis should surely come in for some recognition.

In analyzing his observations of ten cases, which all clinicians would certainly have diagnosed as Sydenham's chorea, he notes the symptoms of organic lesions and of the central nervous system. In the beginning the muscular strength is reduced on the side where the chorea predominates; this hemiparesis is so well marked in the upper extremities of the body that it is easily observed, whereas in the lower extremities it is sometimes necessary to search for it. The disturbances of the muscular tonus are habitual and invariably constant; they are characterized by hypotonia.

Hypotonia is easier to detect in the upper extremities than in the lower. In an upper extremity, the hand is easily brought back to the shoulder, just as in the hemiplegics (Babinski), after flexion of the elbow, the same can be done, though more rarely, resulting in a hyperflexion of the forearm on the arm. The elbow brought back behind the head is brought nearer to the attachment of the neck; and the shoulder is often lowered. In a lower extremity, when the thigh is flexed at right angles to the body, the foot is more easily brought in contact with the buttocks. Hypotonia has also been studied by Bonhoeffer and Hey.

Hypotonia predominates in certain muscles; for example, in the supinators of the upper extremities. The phenomenon may manifest itself in a hemiplegic, following the movements named after Babinski. After having flexed the forearms on the arms, the arms and hands being

supinated, the muscles tense, the hands are quickly made to ascend by a series of little taps. Then will be seen that the hand on the side most affected will be pronated, while the other will remain supinated. The phenomenon of pronation is produced again when both arms have been elevated simultaneously; the hand on the most affected side will be observed to be more pronated. This is seen even better when the arms are hanging down and swinging the full length of the body, since one of the hands is so much more pronated than the other that it presents its entire dorsal surface. The same position is sometimes taken for a short time while walking, or kept up altogether.

Synkinesis of an upper extremity, or associated movements, occurs almost constantly. When a child attempts to squeeze very hard with the less affected hand, one observes a similar energetic movement of the affected hand; but, inversely, this does not take place. Sometimes, instead of a flexion of the hand, hyperextension or a redoubling of the choreic movements obtains. We know that synkinesis is habitual in hemiplegics. In certain invalids, in whom there are the disturbances of synergy and of coördination, the forced closing of the affected hand sometimes causes on the same side an elevation of the shoulder; which elevation is much greater than would be the effect on the opposite shoulder by forcibly closing the healthy hand. A simple movement is accompanied by trembling, or the movements may be non-continuous and recur many times at intervals.

What is noticeable in those affected is the impossibility of executing alternate movements in quick succession, since even the choreic movements do not suffice in themselves to make up the symptoms of the disease. The combined flexion of the thigh on the pelvis has also been noted. M. Babinski, who has mentioned this symptom in organic hemiplegia, has come across it twice in Sydenham's chorea.

The tendinous reflexes are rarely affected. In one patient the patellar and achillis reflexes were completely abolished on one side, but this was a case in transition between simple chorea and chorea mollis. Twice the observation has been made of a prolonged patellar reflex, after a blow on the patellar tendon, the knee remaining some seconds extended on the thigh. This phenomenon has already been observed by Weill, of Lyons, Gordon, Peacock, and Esner. These authors agree with Hutinel and Babonneix that "when the patellar reflex is studied, and when on percussion the leg is projected a certain distance, it will remain in a prolonged tonic contraction, then redescend slowly to the normal position."

The cutaneous reflexes may be altered. Four times there was observed Babinski's Sign; once Oppenheim's Sign, with Babinski's lacking. Babinski's Sign has been noticed once in Sydenham's chorea by M. Charpentier, and thrice in twenty-three cases by MM. Hutinel and Babonneix.

The examination of the cephalorachidian fluid following lumbar puncture, has many times been positive in showing a limited lymphocytosis. As a result of these facts, we can prove that in Sydenham's chorea there exist signs which belong to the symptomatology of the organic maladies of the central nervous system and, moreover, some of those, which, since the labors of M. Babinski, are considered as indicative beyond a doubt of a perturbation of the pyramidal fasciculus. Others on the contrary belong to the symptomatology of localized lesions of other anatomic systems than the cortical motor substance. These signs of an organic lesion are not always complete in all choreics; in some,

there are only two or three to be found; in others, Babinski's Sign is the only one present. Moreover in some cases they are completely absent, but even so, should we exclude the hypothesis of an organic lesion? Does not chorea, even when considered only as a symptom of an organic malady, possess the characteristics of so important a disturbance?

An examination of the facts shows that there definitely exist in choreics two sorts of kinetic disturbances: First, disordered movements, irregular without any apparent cause, and involuntary; these are the properly called choreic movements. They are much improved under the influence of repose, the best therapeutic measure at our command to combat chorea, and also under volition, since much is gained by insisting on the afflicted remaining tranquil; secondly, the clonico-tonic convulsions,—those which do not appear to be modified by repose or volition, but are in a measure instrumental in setting free the choreic movements.

What is the nature and what is the seat of the lesion in chorea, if it is an organic malady? The ensemble of the symptoms, their predominance on one side, and a certain degree of paresis, are things that indicate a lesion of the motor cortical zone. The coexistence of minor mental troubles, such as irritability, agitation, insomnia, inaptitude for work, lack of attention, makes one partial to the view that the cerebral cortex is involved. The infectious origin is the most probable cause; rheumatism, for instance, being quite a frequent source of infection. Basing his statements on clinical observations, M. André-Thomas concludes that Sydenham's chorea is not a neurosis but a symptom of encephalitis or meningo-encephalitis.

Here should be stated that all authorities do not admit this. For instance is chronic chorea, which is seen following a simple emotion, always an organic malady? Does its habitual curability class it with an anatomic lesion of the nervous center, and does it suffice to admit that this lesion is transitory? The future will teach us this, without doubt; but at present we are already in a position to admit that chronic chorea, known as Sydenham's, is not always a pure neurosis. The line of argument advanced by M. André-Thomas resolves itself into this,—that in a number of cases this affection is really of organic origin.

October 10.

EDITOR INTERSTATE MEDICAL JOURNAL:

I have read with great interest Dr. A. Housquains' Paris letter, in the August number of your excellent JOURNAL, concerning cantharides in the treatment of epithelial nephritis, as reported by Prof. Lancereaux. The writer of the letter leaves it to be inferred that this treatment is a new discovery by Prof. Lancereaux, a return to an idea originated and developed by him fifteen years ago.

In the interest of truth and to give credit where credit is due, I beg to call your readers' attention to the fact that this employment of cantharides is much older than the claimed discovery of Lancereaux's, is far older than the professor himself. For in 1805 was published in Leipsic Hahnemann's *fragmenta de viribus medicamentorum positivis, sive in sano corpore humano observatis*, as its full Latin title reads. This contained the partial pathogenesis of twenty-seven drugs, among which was cantharides, with 20 symptoms observed by Hahnemann and 74 by

others. In this "Fragmenta" were already recorded some of the symptoms which were to guide future students of homeopathy to the selection of cantharis for the treatment of inflammatory conditions of the genito-urinary organs, among them nephritis, a selection which could only be conceived for acute inflammations upon the determinate knowledge and with the posology of Homeopathy. Hahnemann did not, however, take the drug up again, and its fuller pathogenesis did not appear until Hartlaub and Trink published their *Arzneimittellehre* (Leipsic 1828-29-31), in which cantharis appears with 952 symptoms, to which Dr. T. F. Allen, of New York, later added symptoms drawn from experiments made by Giacomini on his pupils, and observations from many other sources, making a total of 1,651 symptoms in the present day homeopathic symptomatology of this drug, giving complete indications for its use in these conditions.

But already, before the appearance of the "Fragmenta," the employment of cantharis for chronic nephritis had been advocated by Groenvelt and Bartholin in the latter half of the 18th century, a suggestion which booted ill for the former, as he was put in Newgate at the instance of the London College for having had the temerity to advocate a so paradoxical and heterodox treatment, which proceeding, I opine, should make Prof. Lancereaux thank his stars that he lives in the more tolerant days of the 20th century. Among more modern authors the Frenchman is, however, by no means the first to advocate cantharides in epithelial nephritis. For besides the numerous Homeopathic authors, who have pointed out that, inasmuch as the renal symptoms of cantharis show that it acts on the secreting tubes rather than, as turpentine, on the Malpighian bodies, and therefore is inferior to the latter in simple suppression of the urine and in hæmaturia, it should be selected when desquamation predominates, as in post-scarlatinal nephritis. Ringer long ago strongly recommended it in this malady. He advocated it in doses of one minim of the tincture, "after the first symptoms have passed off," which latter observation he could have omitted, if he had been willing to take his dosage from the system of therapeutics where he probably found the indications for his drug. But it is noteworthy that neither Prof. Lancereaux, nor Ringer, or his confrere, Phillips, gives credit to Homeopathy for therapeutic practices advocated in their writings, practices which are evidently purloined from Homeopathic sources and which the merest tyro in Homeopathy knows as he knows his primer.

Should you find space for these lines in a future issue of your JOURNAL, it would be appreciated by

Yours very truly,

DR. A. E. JOHNSON.

St. Louis, August 10, 1909.

HISTORICAL NOTES.

GIUSEPPE RIBERA, 1588-1656.

It may be interesting to physicians to learn that theirs is not the only profession whose members have been guilty of petty meannesses, of acts of cruelty, and of downright injustice toward each other. The annals of art furnish numerous instances of the persecution of artist by artists, of sculptor by sculptors, of professor by rival professors. It is probable that such acts of injustice, inspired by professional jealousy, in no place have assumed a fiercer aspect than in Naples.

In the seventeenth century the Neapolitan school of art was dominated by a self-educated man of mean character and fierce disposition, who, while he tyrannized his pupils, did not hesitate to do bodily harm to his rivals. The fame of Caravaggio depended on his success in making Nature triumphant over Mannerism. Coarse and brutal as he was, he obtained a temporary reputation which was scarcely less extensive than that which was accorded to Raphael and Corregio. The pupils of Caravaggio, the Neapolitan banditti of art, followed in the footsteps of their master. They systematically persecuted all who were outside of their circle, and, while guiding the taste of the public, they did not scruple to commit murder in order to enforce their monopoly of art. Such men were Bellisario Corenzio, a Greek; Giambattista Caracciolo, a Neapolitan, and Giuseppe Ribera, known as *Lo Spagnuolo*, from his Spanish origin. The persecutions which these conspirators inflicted upon the illustrious Annibal Caracci, who had been called to Naples to adorn the Duomo of St. Januarius, caused this eminent painter to return to Rome, where he died heartbroken. His pupil Guido, and the venerable Arpino, saved their lives by flight. Ruggieri and Meini, who were left behind to finish the work, were enticed on board a galley in the bay of Naples and were seen no more. Domenichino, Italy's greatest historical painter, who was summoned in 1629 to finish the church decorations, had his life embittered by calumnies, criticisms, schemes and plots, and only the pledged word of honor of the Spanish Viceroy saved him from physical violence.

Brought to Naples at an early age by his father, Ribera in 1606 was placed in the school of Caravaggio. Rapidly gaining fame, he was loaded with honors and became the acknowledged leader of the Naples school of art. He and his associates formed a conspiracy of painters, whose object was to exclude from Naples all artists who did not worship at their shrine. It was but natural that such an untamed nature should produce frightful and hideous pictures. The softening influence of travel and of study under Roman, Tuscan and Bolognese masters was soon lost by Ribera, who returned to ruffianism and to horror.

Ribera's power lies in his knowledge of anatomy and in his ability to depict suffering. He delights in portraying the most excruciating pain, in painting torture, in drawing wrinkles, and in skinning his sub-



THE FLAYING OF SAINT BARTHOLOMEW.

(Etching by Ribera.)

jects alive. The colorless muscles of St. Jerome, the spasms and torture of Ixion, the quivering flesh of St. Bartholomew, and Cato of Utica tearing out his own entrails, are splendid examples of anatomical knowledge as applied to horrors of art. They are masterpieces of torture, made by the hand of an artist with the heart of an assassin.

In addition to his other works, Ribera made twenty-six etchings from his own paintings or designs. These are of great merit and include studies of the lower extremities, the hand, the eye, the ear, the face, etc. A striking figure is that of the head and neck of a patient who was afflicted with multiple fibromata. This is much less repulsive than the agonizing scene in which an aged man, who is bound to a tree, is being skinned alive by a murderous looking individual. This etching—*The Flaying of St. Bartholomew*—expresses more than the murder of a saint; it shows the ferocious spirit of Ribera, who not only etched this subject, but also painted it several times.

BOOK REVIEWS.

STUDIES OF THE HUMAN FORM. FOR ARTISTS, SCULPTORS AND SCIENTISTS. By R. W. Shufeldt, M. D., Major and Surgeon, United States Army (Retired). Published by F. A. Davis Company, Philadelphia.

Inspection, palpation, percussion and auscultation are the successive steps of a proper physical examination. It is to be deplored that very often, entirely too often, the very important first step of this procedure either is omitted or is made in such a superficial manner that its practical value becomes *nil*. It can not be denied that the well trained eye will readily recognize even slight deviations of form and contour, and such recognition must be of importance in the diagnosis of an existing pathologic condition. The chief value of a book like the one before us for the physician lies in the fact that it offers him an opportunity to familiarize himself with the appearance and shape of every part of the body while in a state of perfect health.

The text of Shufeldt's work, when compared with the many similar works published by Straaz, with much more detail, deals with points of special interest to the artist, but offers so much valuable information concerning the medical aspect of the problem, that we feel justified in calling here attention to the appearance of these Studies of the Human Form. This Imperial Octavo volume of nearly 700 pages, containing 428 excellent illustrations and a large number of other artistic cuts, will afford interesting and instructive reading to every physician during hours of leisure.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, etc. Philadelphia and London: J. B. Lippincott Company. Volume I., Nineteenth Series. 1909.

The contents of this first volume of the 19th series includes such articles as the following: The Hospital for Advanced Cases of Tuberculosis, Flick; Occupations and So-called Rheumatic Pains, Walsh; Mikulicz's Disease and Allied Conditions, Howard; Acute Tubercular Rheumatism, Lericke; Diag. of Gastric Dilatation, Sommerville; Typhobacillosis, Landouzy; Nerve Grafting in Facial Paralysis, Freeman; Suppuration in Appendicitis, Corner; Excision of the Hip-joint in Arth. Deformans, Richardson; Conditions Modifying Operative Work, Moth; A Case of Acute Yellow Atrophy of the Liver and Pernicious Vomiting of Pregnancy, Jardine; Intestinal Obstruction During Pregnancy and the Post-partum, Cumston.

INTERNATIONAL CLINICS. Philadelphia and London: J. B. Lippincott Company. Volume II., Nineteenth Series. 1909.

Contents: Immunization Against Typhoid Fever, Shoemaker; Mineral Waters in the Treatment of Syphilis, Carriere; Diagnosis and Treatment of Pneumonia in Children, Fischer; Psychasthenia, Loveland; Tuberculous Serofibrinous Pleurisy and Its Treatment, Allyn; Some Remarks on Hyperchlorhydria, Niles; Cong. Familial Splenomegaly with Chronic Acholuric Jaundice, Weber; Diabetes, Wells; Cong. Idiopathic Dilatation of the Colon, Danial; Surgical Pneumothorax as a Treatment for Phthisis, Dumarest; The Present Status of the Cammidge Reaction, Goodman; The Treatment of Abscess in Hip Disease, Schwatt.

INTERNATIONAL CLINICS. Philadelphia and London: J. B. Lippincott Company. Volume III., Eighteenth Series. 1908.

This volume contains many valuable papers by eminent authorities and maintains the high standard of previous issues. Among the subjects considered are:

Sciatica, Its Nature and Treatment, Duckworth; The Treatment of Pertussis of Fluoroform, Tissier; Two Cases of Tetanus Treated with Cholesterin with Recovery, Almagia; Perforation of the Intestine in Typhoid Fever, Scott; On the Value of Oesophagoscopy from the Point of Diagnosis and Therapeusis,

Guisez; Considerations as to the Nature of Hysteria with Their Application to the Treatment of a Case, Williams; The Cytological Examination of a Case Diagnosed Clinically Malignant Disease of the Liver and the Spleen, Swan; Melanotic Neoplasms, Gibbon; The Modern Treatment of Fractures by Means of Direct Internal Splintage, Corner; Adenoma of the Thyroid Gland, Muller; Pericolic Inflammation, Clogg.

INTERNATIONAL CLINICS. Philadelphia and London: J. B. Lippincott Company. Volume IV., Eighteenth Series, 1908.

Among the subjects presented in this volume by well-known authors are the following:

The Advance of Physical Therapeutics, Pratt; The Treatment of Gastric Ulcer Based Upon the Results of One Hundred and Forty Cases, Lichty; Psychotherapeutics, with Special Reference to the Influence of the Mind Upon the Body, Palmer; A Brief Study of Gout, Including Treatment, Wainwright; Splanchnoptosis-Enteroptosis—Glenard's Disease, Brown; A Case of Primary Splenomegaly (Splenic Anæmia) with Remarks on the Various Causes of Chronic Enlargement of the Spleen in Adults, Weber; Gangrenous Appendicitis with Spontaneous Cure Due to Discharge Through Intestine.

ATLAS AND TEXT-BOOK OF HUMAN ANATOMY. By Dr. Johannes Sobotta. Volume III. Vascular System, Lymphatic System, Nervous System and Sense Organs, with 297 illustrations, mostly in colors. Philadelphia and London: W. B. Saunders Company.

This is the last volume of Sobotta's excellent Atlas and covers the vascular system and the entire nervous system together with the organs of special sense. The same high character of illustrations and descriptive text is carried out as appeared in the two previous volumes.

SPRAINS AND ALLIED INJURIES OF JOINTS. By R. H. Anglin Whitelocke, M.D., M.C. (Edin.), F.R.C.S. (Eng.) London: Henry Frowde, Oxford University Press, 1909.

This book comprises chiefly the writer's personal experiences and is a very helpful work for every practitioner in treating sprains, strains and joint injuries. It is incumbent upon every practitioner to be able not only to treat these affections successfully but to give sound and reliable prognoses. The author does not claim to put in the 230 pages all that is known on this subject; his intention is rather to supply certain details, operative and otherwise, which are not found in the ordinary text-book on surgery. Of special note is the chapter on sprains in the region of the knee joint.

OXFORD MEDICAL PUBLICATIONS. GRAPHIC METHODS IN HEART DISEASE. By John Hay, M.D., M.R.C.P., with an Introduction by James Mackenzie, M.D., M.R.C.P. London: Henry Frowde; Hodder & Stoughton, 1909.

Graphic methods of investigating the disorders and diseases of the heart have opened up numerous avenues of research and it is now generally recognized that valuable information is obtained by such means, concerning diagnosis, prognosis and treatment. The ordinary sphygmographic tracings of the radial pulse have but slight value. That correct deductions concerning cardiac abnormalities may be drawn, it is necessary to take simultaneous tracings such as those of jugular and radial pulse. In this way, information may be obtained concerning the activity of the auricle, the ventricle and the auriculo-ventricular bundle. A variety of apparatus is available for this purpose but the most convenient for clinical use seems to be a modification of Dudgeon's sphygmograph. In this, besides the ordinary apparatus, there is a time marker and an attachment for an arm bearing a tambour which may be used for simultaneous records of the jugular, epigastric, hepatic or apical pulse. In Hay's book a full description of the various abnormalities of cardiac rhythm as interpreted by graphic methods will be found. It is profusely illustrated by means of characteristic tracings, not the least valuable element in the book. It forms a useful introduction to this fascinating field of clinical research.

OXFORD MEDICAL PUBLICATIONS. MEDICAL INSPECTION OF SCHOOLS. By A. H. Hogarth, M.B., B.Ch., Oxon., D.P.H. London: Henry Frowde; Hodder & Stoughton, 1909.

The problems connected with medical inspection of schools are somewhat different in England than in this country. The great bulk of the population of the large cities there are much poorer and very much more ignorant than with us. The educational system, too, differs from ours in many respects. The data

and the conclusions contained in Hogarth's book therefore have no direct bearing upon our own conditions but will nevertheless be of importance to all who are interested in educational hygiene. The writer differs from most of his predecessors in minimizing the importance of the early detection of contagious diseases on the part of the school inspectors, believing, as he does, that contagion is spread more effectively outside of the schools than in. The value of inspection, to him, lies chiefly in the detection of unrecognized but remedial physical defects and in the segregation of those who are mentally unfit to keep step with their mates in the school routine. A bibliography and a good index add greatly to the value of the book.

ATLAS DER KLINISCHEN MIKROSKOPIE DES BLUTES. Zweite Auflage bearbeitet von Privatdozent Dr. E. Meyer und Professor Dr. H. Rieder in München (unter Mitwirkung von Dr. G. Maurer, München). Leipzig: Verlag von F. C. W. Vogel. 1907.

This magnificent series of plates is truly a triumph of lithography. In it human blood, as seen under the microscope, is portrayed both normal and pathologic, stained and unstained, so true to nature that one may almost believe one sees the preparations themselves. The plates illustrative of the three kinds of malaria are especially beautiful and instructive. The remarks regarding technique contain many a practical hint, such as the advice to mount the cover glass blood side upwards, if a permanent preparation is desired. Only so can the decolorizing action of Canada Balsam be avoided. Every teacher or amateur of hematology will be glad to possess the volume.

LE CANCER. Dr. E. Doyen. Paris: Librairie Universelle and Librairie A. Maloine. 1909.

In 1886 Dr. Doyen deposited with the Academy of Sciences a sealed communication which, when opened in 1904, was found to contain an account of certain granules present in the expressed juice of various malignant tumors. They are spherical, vary in size from 1 to 6 micra, are motile and stain with difficulty. After many failures, Doyen succeeded in growing a microorganism, which he considered identical with these granules, in a medium made out of cows' udders and in transplanting them later upon a variety of culture media. As he obtained this bacterium from some 90 per cent. of all rapidly growing tumors, he considered it to be the microorganism responsible for their occurrence and named it the *micrococcus neoformans*. This announcement was met by a storm of denial and ridicule, which was not allayed when he went further and reported a number of inoperable cancers cured by means of vaccination with his micrococcus. The general attitude towards Doyen's discovery has been one of persistent skepticism. Those who are interested in Doyen's side of the controversy will find it set down here, clearly and in detail if somewhat polemically. The personalities lend a touch of gayety to the book and one is not surprised to find his most energetic adversaries branded as absolutely ignorant of the elements of bacteriology.

TASCHENBUCH DER THERAPIE MIT BESONDERER BERÜCKSICHTIGUNG DER THERAPIE AN DEN BERLINER, WIENER U. A. DEUTSCHEN KLINIKEN. Herausg. von Dr. M. T. Schnirer. Fünfte vermehrte und verbesserte Ausgabe. Würzburg: A. Stuber's Verlag (C. Kabitzsch). 1909.

As its title indicates this booklet, readily carried in the pocket, is a compendium of the best German therapeutic practice.

A POCKET FORMULARY. By E. Quin Thornton, M. D. Ninth Edition, Revised. Lea & Febiger, Philadelphia and New York. n. d.

Thornton's Pocket Medical Formulary, one of the best of its kind, is too well known to require much description. Arranged alphabetically according to diseases, a vast mass of prescriptions are here accessible. The compiler is conservative in his tendencies and his book presents the old tried remedies rather than the newest medicinal suggestions.

ETUDES ANATOMO-CLINIQUES, COEUR-VAISSEAUX-POUMONS. Par Le Dr. Raymond Tripier, Avec 32 figures dans le texte. Paris: G. Steinheil, Editeur. 1909.

The striking characteristics of Prof. Tripier's book is the fact that, throughout, his clinical and therapeutic observations have been based upon an extensive pathologic foundation. The various chapters, each a monograph in itself, discuss respectively endocarditis, syphilitic aortitis, mitral atheroma, arterio-sclerosis, pleuritic adhesions, reciprocal relations between cardiac and pulmonary affections, initial lesions of pulmonary tuberculosis and the like. Each chapter

takes up in detail the pathologic anatomy of the organ under discussion, proceeding then to a briefer account of symptomatology, diagnosis and treatment. The whole is cast in the somewhat rigid, systematic mould characteristic of French medical writing, rarely enlivened by a narration of concrete cases. While somewhat stiff reading, it is full of meat and will well repay study.

CLINICAL TREATISES ON THE SYMPTOMATOLOGY AND DIAGNOSIS OF DISORDERS OF RESPIRATION AND CIRCULATION. By Prof. Edmund von Neusser, M. D. Authorized English Translation, by Andrew McFarlane, M. D. Part III., *Angina Pectoris*. New York: E. B. Treat & Co. 1909. Price, \$1.00.

In a brief monograph of 71 pages, Prof. von Neusser treats the subject of angina pectoris. Drawing from his vast fund of clinical experience he is able to illustrate his views by means of a wealth of interesting cases, most of them drawn from the second medical clinic of Vienna, of which he is chief. The etiology, pathology, symptomatology, diagnosis, etc., are discussed in great detail but, of the 71 pages, a scant 2 are devoted to treatment. And indeed in the face of true angina pectoris we are well-nigh helpless. A hope for the eventual production of a real causal therapy for this disease lies, he believes, in the future discovery of an antibody for the product of the adrenals, perhaps by means of the subcutaneous implantation of fragments of adrenal tissue. Symptomatically the nitrites and the theobromine preparations may be of use and quinine in small doses is serviceable to an extent not generally appreciated. Digitalis is often dangerous in angina pectoris on account of its vaso-constrictor action and the same applies to morphine. The absence of an index is a fault even in so small a volume.

DIAGNOSTIC METHODS, CHEMICAL, BACTERIOLOGICAL AND MICROSCOPICAL. A Text-book for Students and Practitioners. By Ralph W. Webster, M. D., Ph.D., with 37 Colored Plates and 164 other Illustrations. Philadelphia: P. Blakiston's Son & Co. 1909. Price, \$6.00, net.

Clinical chemistry and microscopy advances with such rapid strides that each year a new text-book is needed to keep up with the increase in our knowledge. Webster's book is good of its kind. While less suited than some others for undergraduate instruction, it is so compendious that it will be found most useful as a book of reference by the laboratory worker. Any great originality is out of place in a compend of this kind. A book like this, clearly written, concise and yet entirely adequate in its description of methods, exercising careful selection and yet including everything of value, well fulfills its function.

NÄHRUNGSMITTEL-TABELLE ZUR AUFSTELLUNG UND BERECHNUNG VON DIÄTVERORDNUNGEN FÜR KRANKENHAUS UND PRAXIS. Von Dr. Hermann Schall und Dr. August Heisler. Mk. 1.90. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909.

In conveniently indexed, tabulated form the authors present a complete list of all the usual articles of diet, with their constitution as regards proteids, carbohydrates, fat, salt, purin bodies, water and calories. In addition there is a description of the various mineral waters, an account of the changes undergone by foods in the course of their preparation for the table, a review of their cellulose and mineral contents and a tabulation of their digestibility. A final series of tables concerns itself with the digestibility of various foods, the requirements of various individuals and other miscellaneous matters. Anyone interested in accurate dietetics will find the little volume valuable.

LEHRBUCH DER SPEZIFISCHEN DIAGNOSTIK UND THERAPIE DER TUBERKULOSE. Für Aerzte und Studierende. Von Dr. Bandelier und Dr. Roepke. 3 erweiterte und verbesserte Auflage. Mit einem Vorwort von Wirke. Geh. Rat. Prof. Dr. R. Koch, Exzellenz. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909.

The fact that within less than two years, three editions of Bandelier and Roepke's book have been called for, speaks not only for the rapid development of our knowledge of the diagnostic and therapeutic utilization of tuberculin but also for the excellence of the text-book under consideration. Within a brief compass, the authors cover adequately the entire field of the use of tuberculin. In common with most observers, while they concede the utility of many varieties of tuberculin, they conclude that Koch's old tuberculin still fulfills all requirements. The cutaneous method of von Pirquet, they consider a coarse one, rarely practically useful in adults but invaluable in small children. The conjunctival method offers no advantages since neither if positive nor if nega-

tive does it justify definite conclusions. The other methods, such as the intracutaneous, the endormatic and the like offer no practical advantages. The most trustworthy diagnostic method, in spite of its incidental drawbacks, is still the hypodermatic administration of tuberculin, which should be done according to Koch's original formula. None of the methods have any prognostic value.

As regards tuberculin therapy, they are enthusiastic advocates in selected cases. In common with other German clinicians, they advocate higher initial doses than are commonly used in this country. Instead of beginning with our extremely great dilutions, they administer a tenth of a milligram at once and increase rapidly to one thousand milligrams. Even so, they rarely meet with serious reactions. The book is indispensable to any one who makes considerable use of tuberculin.

ESSENTIALS OF LABORATORY DIAGNOSIS, DESIGNED FOR STUDENTS AND PRACTITIONERS.

By Francis Ashley Faught, M. D. Containing an Indian Scale in Colors. Six Full Page Plates and Numerous Engravings in the Text. Philadelphia: F. A. Davis Co. 1909.

This compendium, while a good example of its class, does not differ sufficiently from its predecessors to require extended notice.

DIE SCHÖNHEITSPFLEGE. FÜR AERZTE UND GEBILDETE LAIEN. Dargestellt von Dr. Orlowski. Zweite Auflage mit 25 Abbildungen im Text. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909.

In condensed form, the writer gives clear and detailed instruction in regard to various cosmetic procedures. The treatment of acne, hyperhydrosis, freckles, dandruff and the like is taken up in turn. The care of the skin, of the nails, the hair, the technique of facial massage, etc., follows. This is a field too much neglected by the general practitioner, who will find the book of very definite value. The matter of massage is taken up with special care and is well illustrated by means of photogravures.

WÜRZBURGER ABHANDLUNGEN AUS DEM GESAMTGEBIET DER PRAKTISCHEN MEDIZIN.

Herausgegeben von Prof. Dr. Joh. Müller und Prof. Dr. Otto Seifert. Die Hygiene des Ohres. Von Dr. Paul Maas. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909. Price, Mk. 0.85.

A brief presentation, for the general practitioner, of aural hygiene, the prophylaxis and the simpler ways of managing aural affections.

DR. JESSNER'S DERMATOLOGISCHE VORTÄGE FÜR PRAKTIKER. Heft 21. Hauttuberkulose (Lupus vulgaris, etc.) einschliesslich Tuberkulide und Lupus Erythematoses. Von Dr. S. Jessner. Würzburg: Curt Kabitzsch (A. Steuber's Verlag). 1909. Price, Mk. 1.30.

The general practitioner will find a clear and concise presentation of the subject of cutaneous tuberculosis in this number of Dr. Jessner's series of dermatologic monographs. Therapeutically the chief stress is laid throughout upon local measures. It is rather surprising to find him, at this day, expressing himself so skeptically regarding the diagnostic value of tuberculin and hardly more hopefully in respect to its therapeutic use.

WÜRZBURGER ABHANDLUNGEN AUS DEM GESAMTGEBIET DER PRAKTISCHEN MEDIZIN.

Herausgegeben von Prof. Dr. Joh. Müller und Prof. Dr. Otto Seifert. IX. Band. 10 Heft. Grundzüge der modernen Behandlung und Bekämpfung des Abdominaltyphus. Von Privatdozent Dr. Hermann Lüdke. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909. Price, Mk. 0.85.

This is a brief summary of the present standpoint regarding the treatment and prevention of typhoid fever. Therapeutically there is ground for the hope that a true curative serum will soon be forthcoming. The rigidly restricted diet is illogical; plentiful feeding is imperative. Purgatives and intestinal antiseptics are useless if not harmful while urinary antiseptics have their place. Hydrotherapeutics are indicated but it must be remembered that the high temperatures of this disease are probably not an unmixed evil since they encourage the production of antibodies. Prophylactically, typhoid vaccination promises much. The most certain method of lessening typhoid morbidity consists, however, in the prompt detection and isolation of the so-called "typhoid carriers."

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EDITORIAL.

THE ALCOHOL SCANDAL.

The wide differences of opinion among physicians as to the ultimate effects of small or large daily doses of alcohol have caused laymen, and some physicians also, to assert that we really know nothing about it. To a limited extent this conclusion is true, yet it is very false in general, for if there is anything which is self-evident, even to the most ignorant layman, it is the disastrous result of excessive indulgence. As a class and as individuals, physicians are body and soul in favor of all practical measures for preventing drunkenness, yet their differences of opinions as to the details of the effects of alcohol seem destined to hamper if not nullify their efforts towards improving the health and morals of mankind in this vital matter. It is therefore high time that we get together and discover wherein our opinions are not based on facts.

There can be no possible differences of opinion as to the necessity for total abstinence on the part of locomotive engineers, motormen, chauffeurs and all others, who, in a moment of mental befuddlement of "moderate drinking," may cause accidents fatal to a large number of people whose lives are in the keeping of these quasi-public servants. Business men are also learning that occasional lapses of clerks, salesmen and workmen, decrease efficiency so greatly, that more money is made from total abstainers. In dozens if not hundreds of employments promotion or even retention in service is being restricted to the abstaining class. There is even a demand that no judge should be a drinking man, for it is openly asserted that in the notorious Ruef and Schmitz scandals in San Francisco, the criminals blocked the course of justice by taking advantage of the intoxication of a judge and obtaining his signature to papers he would not have signed if sober. In Virginia a similar scandal has resulted from the drinking habit of a State judge.

The number of abstainers is thus increasing from year to year and one would suppose that in time the necessities of civilization would

bring about universal abstinence, yet we are confronted by the astounding fact that the per capita consumption of alcohol is steadily increasing while drunkenness is decreasing, and this in spite of the spread of prohibition which makes it increasingly difficult to procure drink. It seems that alcohol, in spite of the frightful results of its abuse, is really a necessity for it has been a beverage for thousands of years,—ever since the ancient Teutons made their “mead” from fermented wild honey. In this country there was formerly an enormous consumption of home-made cider containing a high percentage of alcohol, and the modern statistics of per capita consumption of beers give a false impression. There is some ground for the statement that no more alcohol is used than formerly, only it is now made in breweries instead of our own cellars.

It has been repeatedly stated that both in plant and animal cells alcohol is one of the stages through which carbo-hydrates are oxydized to carbon dioxide, as a result of enzyme action, and that alcohol is always present in our tissues. The general trend of opinion, with a few marked dissenters, is to the effect that alcohol in small doses highly diluted is beneficial as a food. It saves one enzyme action in the same manner as a small amount of sugar saves the organism the labor of digesting that much starch, though both sugar and alcohol are harmful irritants in strong solution. The old claim that alcohol is never a food and always an irritant even in drop doses seems to be on the point of abandonment though the opinion is still held by a few men whose position entitles them to a hearing. Moreover there seems to be an increasing number of physicians who are asserting that life long observation convinces them that a very moderate indulgence has proved distinctly beneficial. Scandalous as it may seem, perhaps there is an instinctive desire for alcohol on the part of the tissues, for we cannot otherwise account for the manner in which abstainers use such large quantities of “soft drinks” containing from 2 to 12 per cent. of alcohol. Recent revelations in England show that many an “abstainer” was taking far more alcohol than those who openly went to the public houses for beer.

There is also an increasing number of articles describing experiments in which long continued administration of excessive doses of alcohol to lower animals has utterly failed to produce the sclerotic or other changes ordinarily ascribed to this poison. What is still more significant of the change in professional opinion is the amazing suggestion that as arterio-sclerosis is often found in those who have never indulged to excess and not so often in the heavy drinkers, the alcohol may have prevented the disease by lessening arterial tension. It is also being hinted that the drinking man, by increasing the flow of urine is “laundering

his blood" better than he who takes but little fluid, and is therefore much freer of those conditions believed to be due to defective elimination. It has been given as the reason why many a drinking man stands the tropics better than many a total abstainer though the popular impression is the very opposite.

In other words the puritanical total abstinence movement which gained such great momentum a half century ago, and which went to such extremes as to assert that a man could not be a true follower of Christ if he drank like Christ did, or made wine as He did, rather carried physicians off their feet. They went with the flood and blamed alcohol for all sorts of things of which it was innocent. Now that we are getting a foothold on solid facts, we are able to resist the flood more and more, and get a correct view of medical phenomena. It is to be hoped that hereafter no one will hold an opinion on this subject unless he has facts on which to base it. In no other way can we come to agreement and end the present scandal which is leading the public to the opinion that as we differ so widely among ourselves we do not know anything about the matter at all.

Above all else we should resist the temptation to consider alcohol the cause of every case of insanity in which there is a history of more or less indulgence. Very frequently the desire to drink to excess is a mere symptom of the nervous condition which ends in mental disturbance, and though we might be safe in asserting that alcohol had hastened the process, we should not exalt it to the dignity of first cause. Indeed alcoholic thirst is so often a sign of nervous disturbance that it is no wonder that some psychiatrists assert that over half or even two-thirds of all cases of insanity are due to drink.

The last error to be foisted upon the public is to detail the mental and nervous effect of relatively large doses, and then assert that it is the result of very moderate drinking. This is simply dishonest and is the reason why the well-known laboratory experiments are made to produce such a profound effect upon lay readers by "temperance" fanatics.

ILLUSIONS OF MEMORY.

The unreliability of witnesses has so long been known that it has built up a most elaborate system of "laws of evidence." Yet even with all the checks and counter-checks to avoid errors of observation and statement it is an axiom of jurisprudence that it is impossible to determine the exact facts from eye-witnesses. Until recently the whole

subject was left to the lawyers but the psychologists have for so long been subjecting the matter to experimental investigation that they seem to be on the point of entering the practical field of legal trials. Recently the public has evinced more than usual interest and it is a satisfaction that this laudable desire is being met by a series of popular articles by Hugo Münsterberg, the Professor of Psychology in Harvard University. (On the Witness Stand. The McClure Co.) Of course it is known by everyone, that if an occurrence is witnessed by say one hundred persons, not one of them is able to see everything that happened, and none can remember exactly what he did see, so that the sworn evidence must be pieced together and the completed legal picture is a mosaic. All this is so self-evident as to require no explanation, as it is a matter of every day experience that we do not notice things happening before our eyes, and that we very quickly forget much of what we do see. Existence would be intolerable—indeed impossible—if we did not possess the power to inhibit perceptions from making a permanent record. We must forget the vast majority of them.

The new viewpoint of experimental psychology is due to the discovery that every one, through the special brain organization peculiar to himself, is physically unable to perceive certain classes of phenomena or remember them even if he does perceive them as they occur. The marked cases have long been known—those unable to recall sounds or visions as well as those whose memory is accurate and complete for a certain class of phenomena. It is then to be expected that each one has his personal equation, which renders him either a good or worthless witness. It is a rather startling proposition that he can be subjected to tests which will reveal his limitations and abilities, so that a proper valuation can be given to his testimony, in arranging it in the mosaic. Yet this is the possibility, and moreover it does seem that in time it will become a necessity.

The interesting part of the new psychology is the fact that our senses deceive us in very definite and measurable ways, and that testimony which is false can be detected. The opposing lawyer is apt to regard false evidence as deliberate in spite of the well known and well proved fact that the witnesses are convinced that what they state are the real facts even when the truth is far different. They are generally illusions of memory and not necessarily illusions of the preceptions—that is, other memories or even suggestions creep into the mental picture in which they become firmly cemented as part of it. The startling statement is that no one can prevent these adulterations unless he goes through a long course of training in the art of observing phenomena of a limited sphere. Even then none of us is a perfect observer and the expert diagnostician is fre-

quently deceived or fails to see phenomena and too when he is on the look out for them. The history of medicine shows that in almost every disease the most obvious symptoms have escaped the notice of millions of practitioners, until a specially gifted man points them out. How foolish then to expect an ordinary witness to note and remember what his eyes see and his ears hear, and how wise to determine by tests the amount he is liable to remember correctly and how much is illusion or intrusion. The frequency and extent of these illusions of memory are the startling revelations of the new psychology. Though it is sad enough to know that we can not trust our own senses too implicitly, it is amazing to know the extent of their deceptions in the case of those whom we might roughly class as the neurotic. Münsterburg's explanations take one into the enormous field of "suggestions"—a field by-the-way which is almost uncultivated by the profession, though its wild fruits are utilized in almost every case we treat. He wisely omits to describe hypnotism other than as a state of suggestibility, though he does not show that it can be wisely used for this purpose. The importance of the matter to the medical profession may be realized when it is learned that "confessions" of accused criminals may be a maze of illusions, resulting from suggestions in hypnotic states. It is a most disquieting thought that a weakling hanged in Chicago for a confessed brutal murder, may have been entirely innocent, and that when he stated six days before his execution that he knew nothing of the crime and had no recollection of his confession, he was telling the truth,—his illusions which had been forced on him by the police methods having faded by this time. The whole matter of testimony deserves as much study by the medical profession as our scandalous "expert" evidence.

THE CAUSE OF UNLIKENESS TO PARENTS.

The quarrel over the origin of variations will not down for it is the modern biological problem which has replaced the old battle over the origin of species. No scientist now doubts that every species is the result of the survival of the fittest variations in some prior species. Nature selects certain new forms as they appear and kills the rest. The law of natural selection seems to be definitely accepted as a proved fact, but the trouble always has been to account for the constant appearance of new forms—the variations—a matter with which the law of selection does not concern itself. The scientific world has always been at wits end to explain why the law of heredity did not always

compel offspring to resemble parents exactly instead of approximately. Some causes exist which apparently compel more or less difference from parents, so that complete resemblance is the rare exception, and unlikeness almost universal.

MacDougal's recent creation of new plant species is thought to be a great step in the explanation of variations. He is now director of the Department of Botanical Research of the Carnegie Institution but for many years has been noted for his remarkably original investigations in plant physiology. His latest work has been to treat the plant ovaries with certain solutions of chemicals and then fertilize them with pollen. He has thus produced new forms which breed true for several generations as though they were permanent changes, and he has announced the theory that many, if not all, variations in nature are thus formed by the action of chemical substances in the ground water or by its radioactivity or by the stings of insects and like causes,—that is, they are mere chemical modifications of the germ cells which would have developed into forms resembling the parent if they had been acted upon by the same environment as the parents during this development.

The medical importance of MacDougal's theory is so overwhelming that the profession must take up the work in earnest to explain pathological and other human variations. Professor E. Ray Lankester in an address to the British Association for the advancement of science directed attention to the fact that physicians can do and should do a great work in this direction because they critically study every specimen of the most important species of living organisms—man himself. They can thus do more than any other profession to explain what heredity really is, and they will also be able to detect the causes of abnormalities. It is noteworthy, that as a class, physicians are always on the search for causes so that they are in a receptive mood for such revolutionary discoveries as those announced by MacDougal. Indeed it is quite commonly asserted that the poisons of syphilis and other infections, alcohol and the metals actually modify the germ cells in the ovary and testicle and cause the new organism to develop abnormally into the wretched creatures who are parasites upon society. That is, we have been observing in the clinic, jail, asylum and poorhouse the identical process which MacDougal produces experimentally in plants. Science may yet prove how the sins of the parents are visited upon the children unto the third or fourth generation—a fact known for thousands of years.

The permanence of MacDougal's new species is still in doubt. Previous theories incline to the view that in time—that is, in many generations—the type returns to the parental form if the exceptional causes are removed, in the same manner that modified bacteria revert, in many genera-

tions, to the original type when the normal environment is restored. He, and many others, too, inclines to the view that the poisons have produced a new chemical—a new protoplasm—which cannot be restored. We hope they are wrong for it casts a cloud upon the bright prospects for the regeneration of the victims of slum life in cities. These poor tots have been poisoned so to speak, so that they are abnormal. The wish may be father to the thought, but the thought is very prevalent nevertheless, that if we could only place them in good surroundings their future offspring will be normal human beings if they themselves are not too badly damaged before we get at them with our aid.

A new movement to cure defective children has been started by the Pennsylvania Society to Protect Children from Cruelty and it is based upon the assumption that abnormalities are neither permanent nor hereditary but due to remediable causes. Their present plan is merely to remove some of the effects of bad living, which of themselves are causes of still further mischief. Physicians make careful examinations and remedy such defects as surgery or ophthalmology will reach. Sometimes—indeed often—it is merely a question of glasses to give vision, the lack of which has caused stupidity, viciousness or far worse. The results so far accomplished are said to be splendid, though the work has brought to light a large number which have been so badly injured before birth or even before conception, perhaps, as to be hopelessly imbecile or feeble-minded. Every thinking man wishes these workers God speed.

The causes of human abnormalities must be studied and this step is urgently needed now that a good beginning has been made in the investigation of the defectives themselves. The causative factors should be discoverable, for the abnormalities are probably due to MacDougal's process of poisoning of germ cells. Indeed this great society is in a position to carry out Lankester's suggestion and help clear up the question of variation and heredity. We may get proof perhaps that every variation from parental type is due to some cause in the environment and that a child will resemble its normal ancestors if it is properly raised. Degeneration has had its day, now let regeneration take its proper position in the center of the stage. The curing of defectives is grand work but prevention is grander. Let every public school child be included in this splendid system of examination—the beginnings have proved successful so let us have more. In every case let there be an earnest effort to find out why the child has developed badly. Biologists are all coming to the opinion that every variation from parental type is due to the environment and the rule must apply to our defectives.

LITERARY NOTES.

THE eighth number of the *Revue de Psychiatrie* publishes a résumé of the curious communications made to the Medico-Psychologic Society by M. Leroy, in regard to singular hallucinations—a form of visual sensations but little understood. These hallucinations have the invariable characteristic of being small, of representing beings and definite objects of slight dimensions, at the same time conserving their relative proportions. Hence the term “lilliputian hallucinations”, which M. Leroy coins to describe these manifestations. It is in fact a lilliputian world that appears to the eyes of the astonished invalid. One interesting case reported is that of a general paralytic who, following a stroke, had intense hallucinatory delirium of all the senses. In the course of this delirium there appeared numerous lilliputian hallucinations: diminutive soldiers defiled in serrated rows; diminutive women toyed with their fans; and diminutive bicycle riders coursed around the room. This world of little people—this microcosm—continually underwent transformation. The disturbance lasted three months and terminated only with the death of the patient. Another case showed a passing hallucinatory delirium, with delirium of the sight and hearing, in which the patient distinctly saw little soldiers dancing around the night-lamp. These psycho-sensorial disturbances are a form of micropsia. Now micropsia has been observed especially in hysterics, epileptics, and in the unbalanced; therefore, it is not wrong to assert that lilliputian hallucinations may occur in all mental maladies, supervening in the form of conscious hallucinations. And they are present despite the fact that the invalid conserves normal vision for all the objects which surround him. M. Leroy cites six observations of this peculiar mental phase taken from the works of Taine, Leuret, and Brierre de Boismont. Taine's illustration concerns a doctor who, following an attack of cholera, saw little people dancing on a table; Leuret's, a priest who while conducting service saw the church filled with small Ethiopians. In accordance with these and other observations, M. Leroy defines the characteristics of lilliputian hallucinations thus: visual sensations of greatly reduced objects that are multiple and mobile and frequently colored, and invariably produce emotions which are agreeable. He compares them with the cinematographic hallucinations of Régis, and attributes their origin to a toxin on account of their characteristics and the circumstances which accompany them. The pathogenesis of these disturbances would support the opinion that micropsia is of toxic origin. M. Leroy recalls the works of Otto Veraguth of Zürich and those of Heilbronner, ranging himself with the latter by affirming that micropsia is a morbid trouble of the cortex. M. de Clérambault has observed lilliputian hallucinations, such as M. Leroy describes them, in alcoholic and chloral exintoxication, and where there are no intoxications, as in circular in-

sanity, in the persecuted-persecutors, and in tabes. Patients are not surprised but amused by these hallucinations, several being of the opinion that "these little persons are excellent company."

As yet, we in this country know little of rhythmic gymnastics as advocated by Jacques Dalcroze, who is the pioneer of the idea that all of us should develop a musical rhythm in walking and gesticulating. He recognizes that gesticulations are manifestations of individuality, expressions, so to speak, of our personality, and his desire is to educate each child until it has a mastery of its movements instead, as obtains to-day, being mastered by them. Every child enjoys the exercises which call into play bodily movements; therefore Dalcroze contends if these movements are made in a rhythmic fashion—that is, in consonance with a musical theme—two very important points are gained: the exercises are of an added interest to the child and the ear becomes so accustomed to correctness of sound that ever after both body and mind are greatly benefited. All of which is an excellent illustration of a modern phase of education that is closely related to psychology. In the April number of the *Archives de Psychologie* is an extensive notice of the two volumes in which Dalcroze ventilates his ideas. The writer's remarks run as follows: "The rhythmic gymnastic method created by Jacques Dalcroze, professor at the Geneva Conservatoire, is becoming widely known in all European countries. In short, it is æsthetic education which has for its object the development of the musical perception by giving music its integral value: making the rhythmic instinct a psychological reality. Rhythmic gymnastics gives muscular expression to the sensation produced by musical rhythm: that is, when rhythm invades the organism, it acquires a psychological value, in that it becomes the complement of æsthetic education. The consciousness of sonorousness united with a perception of rhythm are intimately associated in all plastic art. We know, moreover, that the sense of rhythm in man is the result of the constitutional necessities of the organism. In other words, rhythm born of coördinated and conscious energy is instrumental in spontaneously eliminating by means of coördination the forces which are obstacles to its achievement. Now conventional education, which has until the present time looked upon corporal manifestations as of an inferior order, has always opposed the rhythmic instinct. On the other hand, rhythmic gymnastics has but one object: by preventing a dissociation of the different elements which go to make up a complete æsthetic manifestation and by tending to re-establish an equilibrium between the intellectual and bodily faculties, artistic expression is shown in a physical manner. And since this equilibrium causes a more complete development of the being, it is not difficult to understand how these exercises can affect most favorably the

bodily health as well as the formation of character. In this respect rhythmic gymnastics is an educator of sovereign worth."

A work which has just been presented to the French Academy of Medicine will be of interest to all those medical men who devote part of their time to the study of medicine in the past. "*La fin de la Faculté de médecine de Reims, ses derniers Docteurs— Régents,*" by Dr. Octave Guelliot, contains interesting chapters on the Faculty of Rheims and its Regents up to the time of the decrees of the National Assembly and the Convention, when throughout the Republic all faculties and diplomas were suppressed. The first part of the work is devoted to a detailed account of the professors, students, instruction and examinations during the last years of the eighteenth century. The Faculty had been some two hundred and fifty years in existence: in fact, ever since the University was founded at the instance of Cardinal de Lorraine through a bull issued by Pope Paul III. on January 5, 1547, and approved by Henry II. The second part relates the events preceding the application of the law of September, 1793, which adjudicated, among the national property to be sold, the sale of a "house situated at Rheims, called a medical school, belonging hitherto to the Corporation of doctors of the township of Rheims; price 3,000 livres." The third part is probably the most engaging, for here are told many anecdotes of the Regents; how, for instance, while awaiting the reorganization of the medical school during those long and tedious years from 1793 to 1808 when they were prohibited from practicing, they, nevertheless, went among their fellow-citizens and by reason of their scientific training and their devotion to their former vocation gave advice and support to all questions affecting hygiene and how best to aid the sick. The reader cannot but admire such fortitude in the face of what must have been a sickening discouragement, for all this was done with no hope of a betterment in medical educational matters. No chapter in the whole French revolutionary period makes sadder reading than when the National Assembly made so light of the science of medicine that it allowed its demagoguery to blind its intelligence to the needs of a people that was striving for freedom.

ORIGINAL ARTICLES.

AN INVESTIGATION AS TO THE PREVALENCE OF VISUAL AND AURAL DEFECTS AMONG THE PUBLIC SCHOOL CHILDREN OF ST. LOUIS COUNTY, MO.

By ALBERT E. TAUSSIG, M. D., of St. Louis.

The following investigation, the funds for which were generously supplied by Mr. B. Greensfelder, of Clayton, Mo., was undertaken under the auspices of the St. Louis School of Philanthropy, at the suggestion of its Director, Prof. Thomas J. Riley. The measurements were made by Drs. J. G. Calhoun and C. A. Vosburg, of St. Louis, under the general direction of the writer.

The prevalence of physical defects among city children has been thoroughly investigated at many places both in this country and abroad and there can no longer be any difference of opinion as to the necessity for thorough medical inspection in city schools.

Much less is known as to the prevalence of such defects among the school children in suburban and rural communities, and yet such information is indispensable to enable the State authorities to form a just opinion as to the advisability of inaugurating a state-wide medical inspection of all school children.

It seemed worth while to undertake such a study of the school children of St. Louis County for the purpose of adding to our knowledge in this matter. The present investigation was limited to the prevalence of impaired vision, defective hearing and well-marked adenoids. Some two thousand children were examined in the public schools of Wellston, Clayton, Webster and Tuxedo, suburban communities in the neighborhood of St. Louis.

The eyes were tested by means of Snellen's charts hung in a good light at a distance of twenty feet, each eye being tested separately. Such an examination, however, fails to reveal the presence of hyperopia, a frequent cause of eye-strain in younger children, and our figures for impaired vision among the youngest children are therefore probably somewhat too low. It seemed best to omit the tests for hyperopia, not only on account of the added labor involved, but also to facilitate a comparison of our results with those obtained elsewhere by examinations limited to the use of Snellen's charts.

The hearing was tested by means of a standard whisper, audible to normal ears at a distance of fifteen to twenty feet, each ear again being tested separately. Adenoids were recorded present only where they clearly interfered with nasal respiration and thus represented an actual handicap to the child. Records were kept on cards arranged as follows:

AGE AT	NAME.....	G.	Q.
NEAREST			
BIRTHDAY			

RIGHT EYE, v. = 20 /	RIGHT EAR, WHISPER HEARD	FT.
LEFT EYE, v. = 20 /	LEFT EAR, WHISPER HEARD	FT.
SPECTACLES? YES. NO.	ADENOIDS? YES. NO.	

DATE	SCHOOL	EXAMINER
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THE TOTAL PERCENTAGE OF VISUAL AND AURAL DEFECTS.

Of the two thousand children examined some 30.6 per cent. had vision that was below normal in one or both eyes. In about half of these children, however, this defect was not sufficiently grave to signify a real handicap. A little over 14 per cent. had vision that was less than two-thirds of the normal in both eyes. This is a serious defect and such eyes urgently demand proper glasses. The extreme cases of visual impairment were rather rare, the children with vision with less than half the normal in both eyes being a little less than 3 per cent. of the total number examined. These findings about correspond to the observations made elsewhere, as illustrated by the following table:

VISUAL DEFECTS IN PUBLIC SCHOOLS.

	Per Cent.
Heidelberg, Germany (1876).....	35
Edinburgh, Scotland (1904).....	43.2
Dunfermline, Scotland (1907)	17
Cleveland, well-to-do district (1907).....	32.4
Cleveland, congested district (1907).....	71.7
Massachusetts, except Boston and environment (1907).....	19.9
Boston and environment (1907).....	30.7

	Per Cent.
Boston (1908)	23
New York City (1906)	31.3
New York City, Borough of Manhattan (1908)	10.2
Chicago (1909)	19.4
Jefferson City, Mo., either eye (1908)	36.5
Jefferson City, Mo., both eyes (1908)	22.7
St. Louis County, Mo., either eye less than 20-20 (1909)	30.6
St. Louis County, Mo., both eyes less than 20-30 (1909)	14.3
St. Louis County, Mo., both eyes less than 20-40 (1909)	2.8

All of these figures are probably a little too small, since they do not include cases of hyperopia or of moderate degrees of astigmatism. Their most striking feature is their lack of uniformity. For this several factors are probably responsible. In the first place, there is no agreement as to what constitutes defective vision. In some cities everything less than perfect vision is reported as defective. Elsewhere vision by both eyes must be less than perfect or must even be less than 20-30. The last would seem a rational criterion since it alone involves a real handicap. It would seem, too, that in congested districts visual defects are more prevalent than elsewhere, as is shown by a comparison of the figures for Edinburgh and Dunfermline, between the two portions of Cleveland and between Boston and the rest of Massachusetts. Finally the drop in the percentage of visual defects in Boston between 1907 and 1908 and in New York City between 1906 and 1908 may, at least in part, be due to the beneficial effects of systematic school inspection.

A similar divergence is seen in the figures for defective hearing. Among our children over 7 per cent. were found defective in either ear, whereas the number able to hear the standard whisper with neither ear at a distance of over ten feet was only a little over 2 per cent. This corresponds fairly with results obtained elsewhere:

DEFECTIVE HEARING IN PUBLIC SCHOOLS.

	Per Cent.
Edinburgh, Scotland (1904)	12.2
Dunfermline, Scotland (1907)	4
Cleveland, well-to-do district (1907)	5.2
Cleveland, congested district (1907)	1.8
Massachusetts, except Boston and environment (1907)	5.8
Boston and environment (1907)	7.7
Boston (1908)	7.6
New York City (1906)	2
New York City, Borough of Manhattan (1908)	1
Chicago (1909)	2.7
Jefferson City, Mo., either ear defective (1908)	7.7
Jefferson City, Mo., both ears defective (1908)	1.3
St. Louis County, Mo., either ear defective (1909)	7.3
St. Louis County, Mo., both ears seriously defective (1909)	2.2

Here, too, our figures suggest that the variation in the results obtained elsewhere may, at least in part, be due to the fact that in some places any departure from the normal is recorded whereas in others only a serious defect is counted.

Adenoids sufficiently well marked seriously to interfere with nasal respiration were found in less than 1 per cent. of our children. This is distinctly less than the findings elsewhere.

PREVALENCE OF ADENOIDS AMONG PUBLIC SCHOOL CHILDREN.

New York City (1908)	16.4 per cent.
Boston (1908)	4.7 per cent.
Chicago (1909)	3.7 per cent.
St. Louis County	0.9 per cent.

The low percentage of adenoids among our children is probably partly due to the fact that we included only well-marked cases. It is also doubtless influenced by the probability that in an intelligent suburban population an unusually large proportion of the children suffering from adenoids receive proper surgical attention. It is of interest to note that, without exception, every one of our cases of adenoids had markedly defective hearing.

2. INFLUENCE OF SEX UPON DEFECTIVE VISION AND HEARING.

On the whole it would seem that defective vision was a little more prevalent among girls than among boys, whereas the reverse is true for defective hearing. Gulick and Ayres have made the same observation in New York in regard to visual defects.

INFLUENCE OF SEX UPON VISUAL AND AUDITORY DEFECTS.

	Boys.	Girls.
New York City (1908) defective vision	15.7%	20.8%
St. Louis County (1909) defective vision	29.1%	31.1%
St. Louis County (1909) seriously defective vision ..	13.5%	15.1%
St. Louis County (1909) defective hearing	8.7%	6.0%

These differences as found in St. Louis County are probably too small to have any definite significance.

3. THE INFLUENCE OF AGE UPON THE FREQUENCY OF PHYSICAL DEFECTS.

In their careful study of New York City school children published last year, Gulick and Ayres made the very interesting observation that the frequency of defects tends steadily to decrease as the children grow older. This furnishes them an explanation for their finding that in each grade the over-age children on the average have fewer physical defects than those of normal age. In our schools the same observation was made, as is shown by the following table. Our figures are uniformly lower than those of Gulick and Ayres since their records included a large variety of defects, while ours were limited to vision, hearing and adenoids.

INFLUENCE OF AGE UPON PREVALENCE OF DEFECTS.

Age.	Per Cent. of Children with Defects.	
	Gulick & Ayres.	St. Louis Co.
6	82.9	40.4
7	86.5	47.8
8	85.8	51.8
9	81.8	41.6
10	77.8	38.1
11	73.8	35.4
12	69.9	35.4
13	68.0	34.3
14	68.1	27.4
15	63.1	27.3
15 and over.....	—	23.9

A closer study of the data, however, discloses a very curious divergence on the part of our observations from those previously made. Gulick and Ayres, while they found a steady decrease in the prevalence of physical defects as the children grew older, noted that the frequency of impaired vision seemed, on the other hand, to increase with age. Observations made in Germany show this fact even more strikingly, the percentage of short-sighted children increasing steadily from a few per cent. in the lowest grades to nearly 100 per cent. in the highest. In our schools, on the other hand, a contrary tendency showed itself. With the exception of the first two years, the frequency of short-sightedness seemed steadily to diminish with increasing age. This is most striking if we tabulate only the unrecognized visual defects, *i. e.*, if we count as normal those whose defective vision is perfectly corrected by glasses. The phenomenon appears, however, hardly less clearly if we count as defective even those wearing correct glasses. The following table contrasts the observations of Gulick and Ayres with ours:

INFLUENCE OF AGE UPON PREVALENCE OF VISUAL DEFECTS.

Age	Per cent. of Children with defective vision Gulick & Ayres	St. Louis Co.		Per cent. wearing glasses St. Louis Co.
		Uncorrected	Total	
6.....		29.4.....	29.4.....	0
7.....		41.0.....	41.0.....	0
8.....	17.5.....	42.5.....	44.1.....	2.1
9.....	20.2.....	32.5.....	32.9.....	0.4
10.....	25.0.....	32.2.....	34.1.....	3.4
11.....	23.9.....	28.3.....	32.7.....	6.6
12.....	26.5.....	28.8.....	32.3.....	5.2
13.....	23.7.....	27.2.....	28.7.....	2.5
14.....	27.7.....	21.7.....	22.3.....	1.7
15.....	25.6.....	20.9.....	22.7.....	2.7
15 and over..		17.7.....	22.1.....	8.0

About 3 per cent. of all the children wore glasses, of which two-thirds were approximately correct, while one-third were definitely incorrect.

The explanation of the divergence of our results from those obtained by others is not readily apparent. Why should the eyes of our children improve with age when those of city children tend to deteriorate? It is not due to any greater care on the part of parents, for the percentage of unrecognized and uncorrected visual defects is as great in St. Louis County as elsewhere and the percentage of visual defects corrected by glasses does not increase with the age of the children. Perhaps the smaller classes of suburban schools enable the teachers to give their pupils more individual attention and so to prevent undue eye-strain. Or it may be that the favorable hygienic surroundings of suburban children make it possible for visual defects spontaneously to correct themselves. The graver visual defects tend to become fewer with advancing age, quite as definitely as the slighter ones, as shown by the following table. The greater irregularity of the fluctuations in the subdivisions of the visual defects is probably due to the fact that we are dealing with smaller figures.

INFLUENCE OF AGE UPON SLIGHT AND GRAVE VISUAL DEFECTS.

PERCENTAGE OF CHILDREN WITH VISUAL DEFECTS.

Age	All visual defects	Slight visual defects	Serious visual defects (vision of both eyes less than 20/30)	Grave visual defects (vision of both eyes less than 50%)
6.....	29.4.....	16.7.....	12.7.....	0.9
7.....	41.0.....	20.8.....	20.2.....	2.8
8.....	42.5.....	16.6.....	25.9.....	2.6
9.....	32.5.....	18.2.....	14.3.....	1.7
10.....	32.2.....	19.0.....	13.2.....	3.9
11.....	28.3.....	19.0.....	9.3.....	2.2
12.....	28.8.....	14.0.....	14.8.....	4.4
13.....	27.2.....	14.6.....	12.5.....	4.0
14.....	21.7.....	11.7.....	10.0.....	2.3
15.....	20.9.....	10.0.....	10.9.....	1.8
15 and over..	17.7.....	7.1.....	10.6.....	2.7

The gravest lesions alone show an irregular increase up to 12 years, but thereafter diminish. Such an increase is to be expected, since it is well known that short-sightedness tends to grow worse under the influence of school work. The surprising feature of these observations is that this increase is not seen in any but the gravest defects and even here not after the age of twelve.

Defects of hearing are not definitely influenced by age, as may be seen by the following table. I have not been able to find other observations for comparison.

INFLUENCE OF AGE UPON DEFECTIVE HEARING.

Age.	Percentage of children with defective hearing.
6.....	11.0
7.....	6.8
8.....	9.3
9.....	9.1
10.....	5.9
11.....	7.1
12.....	6.6
13.....	7.1
14.....	5.7
15.....	6.4
15 and over.....	6.2

The extreme cases of adenoids were too few in number to render a classification by ages trustworthy. So far as our figures went, however, they indicated an increase in frequency up to 2.5 per cent. at the age of 10 years and thereafter a diminution. Gulick and Ayres, with their larger material, found a steady decrease in frequency from 6 to 15 years.

4. HAVE PHYSICAL DEFECTS AN IMPORTANT BEARING ON SCHOOL PROGRESS?

This problem has apparently never been properly approached. Gulick and Ayres divided the children in each grade into those of normal age and those over age. The latter are those who for one reason or another have been retarded in their school progress. They found, nearly constantly, a greater frequency of physical defects in each grade among the children of normal age than in those above the normal age. At first sight this might seem to show that physical defects are conducive to school progress. As they point out, however, it is clear that since the frequency of physical defects tends to decrease as the children grow older, children in each grade who are above the normal age will have fewer defects than those of normal age, just because they are older. This method can, therefore, not lead to any solution of the problem. It is better to approach the question from the other side. If for each age we determine the average grade of all the children of that age, such an average grade can be calculated for normal and for defective children. If at each age the normal children will, on the average, be found to have attained a more advanced grade than the physically defective ones, we may fairly conclude that these defects have proven a handicap to school progress and the difference between the average grades will be an approximate measure of this handicap. The word "grade" is here used in

the technical school sense, signifying a stage of scholastic progress. In our schools the children begin with the first grade, advancing annually, on the average, one grade up to the eighth. For purposes of comparison I have called the high-school the ninth grade. When we tabulate our data according to this method we obtain the following table. It will be seen that, on the whole, the children with visual or aural defects make slower progress at school than their normal mates. The difference is not, however, nearly as great nor as constant as we might *a priori* expect, indeed about half the time this difference is practically negligible. Moreover, the children with grave visual defects have apparently not at all lagged behind those with slighter visual impairment.

AVERAGE GRADES OF NORMAL AND PHYSICALLY DEFECTIVE CHILDREN.

Age	Normal Children	Children with visual defects	Children with serious visual defects (both eyes less than 20/30)	Children with impaired hearing
6.....	1.1.....	1.1.....	1.1.....	1.1
7.....	1.3.....	1.6.....	1.7.....	1.7
8.....	2.2.....	2.1.....	2.1.....	2.0
9.....	3.0.....	2.8.....	2.6.....	3.0
10.....	3.7.....	3.3.....	3.2.....	3.8
11.....	4.0.....	4.0.....	3.7.....	4.0
12.....	5.0.....	4.9.....	5.2.....	4.5
13.....	6.2.....	5.9.....	5.7.....	5.9
14.....	7.0.....	7.0.....	7.4.....	6.3
15.....	7.8.....	7.6.....	7.7.....	6.9
15 and over...	8.7.....	8.4.....	7.8.....	8.3

The question naturally arises: "Why do not these physical defects cause a greater and more constant retardation in the children's school progress?" This question does not, in the present state of our knowledge, admit of a definite answer. It was suggested by a number of teachers, to whom the point was submitted, that possibly the explanation might lie in the prevalence of the so-called "lock-step." It seems that in many schools at the end of each preordained period, practically all the children are promoted to the next higher grade, irrespective of whether they have done their work well or ill. The dullards are pushed along with their brighter fellow students and the latter are held back to allow the former to keep pace with them. An exception is made only occasionally, when the pupil is extremely quick or extremely derelict. Under these circumstances the school work of the children with defective vision or hearing might be seriously hampered without their school progress, as shown by a table like the above being definitely retarded.

CONCLUSIONS.

The following conclusions may fairly be drawn from our data:

1. Unrecognized or at least untreated defects of vision and hearing are nearly as common in our suburban communities as in large cities. Both call urgently for systematic medical inspection.

2. Unrecognized adenoids, so extreme as to cause serious interference with normal respiration, were not found to be very common. In nearly one per cent. of the children, however, the adenoids imperatively demanded operation. The condition was apparently not realized by the parents and here too adequate medical inspection might be of great service to the children so affected. It is probable that the marked deafness, present in every one of the children with adenoids, would disappear promptly after operation.

3. Defective vision seems a little commoner among girls and defective hearing among boys. The difference is not, however, very great.

4. In other communities a progressive increase in the prevalence of impaired vision was noted as the children grew older, whereas in St. Louis County the reverse was found to be true, both as regards slight and grave defects. The explanation of this fact is not readily apparent. It does not, however, furnish an argument against inspection, since at the best these defects are common enough. The fact that one-third of the children with spectacles wore unsuitable glasses is also suggestive in this respect.

5. Our data show that to a certain, though not very great extent, the children with impaired vision or hearing progress more slowly in their school work than their normal fellow students. The evil effects of unrecognized physical defects go, however, far deeper than this. Owing to the fact that, to a great extent, children are promoted from one grade to the next, irrespective of the quality of their school work, the brighter children are necessarily held back to a pace that can be followed by the dullards. It is clear that the latter class will in part consist of children mentally normal, but handicapped by impaired hearing or vision or by other remediable defects. Adequate medical school inspection would lead to the recognition and, to a great extent, to the correction of such defects. Such children would then not only themselves be able to do better work, but by ceasing to act as a drag upon the normal children would enable the later to progress more rapidly. The efficiency of school inspection, in this respect, is shown by the fact that in cities in which this measure has been in operation for some years, a considerable diminution in the prevalence of physical defects has been noted.

6. The marked divergence between the data obtained in different cities or, in the same city, by different investigators indicates the need for greater uniformity in methods of tabulating these statistics. Thus children with slightly impaired vision in one eye would by some examiners be

classed as normal, by others as defective. For statistical purposes it is important for the investigator to state just where he draws the line between defective and normal. As regards vision, hearing and adenoids, a division into slight and serious defects is to be recommended.

7. In estimating the value of medical inspection of school children, it must be remembered that the above consideration form but a portion, and that a small portion, of the argument in its favor. The greatest benefit to be derived from inspection consists in the early recognition of contagious diseases and the prevention of school epidemics. It is far more efficient, in every way, promptly to recognize and isolate the first case of contagious disease than to close the school when the harm has been done. This aspect of the question, however, no longer admits of argument, whereas the value of a general physical inspection in suburban and rural communities still seemed worthy of demonstration.

APPENDIX.

It is clear that in future investigations, the bearing of physical defects upon school progress can best be estimated by calculating the average grade for each age in normal and in defective children. The problem, arithmetically, is an interesting variation of the method of determining the point of equilibrium of a straight lever. The number of children in each grade is multiplied by the number of the grade. The sum of these products divided by the total number of children gives the average grade.

Example: Normal children, aged 8 years, are divided among the first four grades as follows: the total number of normal children of this age being 94:

Grade.		Number of children.		Product.
1	X	17	=	17
2	X	50	=	100
3	X	26	=	78
4	X	1	=	4
		<hr/> 94		<hr/> 199

199

$\frac{199}{94} = 2.16$, the average grade of normal children aged 8-years.

94

If we regard as a unit of work done, the passing through one grade of one child, then towards the end of the school year, the 17 children in grade 1 will have done 17 units of work. The 50 children in grade 2 will, during their school life, have done 100 units of work, the 26 in grade 3 will have done 78 units, etc. Thus the 94 normal children aged 8 will have done 199 units of work, and the average child will have done 2.16 units. The last will, therefore, represent the grade of the average or

type child of this group. It is clear that unless artificially held back, the more fit a group of children is, the greater the number of units of work it will accomplish and the higher its average grade will be. Thus, in the absence of the so-called "lock-step," the difference between the average grade, at each age, of normal children and those with any special defect will be a measure of the influence exerted by this defect upon school work. Or, on the other hand, assuming that such defect does seriously influence school work, the absence of such a difference indicates the prevalence of the "lock-step."

A NOTE ON THE VALUE OF THE EXAMINATION OF
FRESH BLOOD.

By S. STROUSE, M. D., of Chicago.
Assistant Pathologist, the Michael Reese Hospital.

The development of many of the newer diagnostic methods has progressed so rapidly as to be almost bewildering, and a well equipped hospital laboratory now requires trained specialists to perform certain tests, as for instance, the Wassermann complement fixation for syphilis. On the other hand, this state of affairs does not belittle the value of thorough clinical examination, history taking, and simple methods which every practicing physician possessing a microscope can perform in his own office without any special apparatus or any great technical training. Consequently any diagnostic aid which can be simply performed should be emphasized.

At the present time one can scarcely practice medicine anywhere without the help of a microscope; such simple procedures as counting leucocytes, studying sputa for tubercle bacilli, are as necessary for successful diagnosis and treatment as is keenness of observation or the clinical thermometer. The value of this need not be emphasized; yet reference may be made to the studies of Stiles on Uncinariasis in the Southern States, the results of which have been so far reaching that a former incurable scourge can now be easily recognized by any practitioner who owns a microscope and almost as easily treated.

It may be stated as a general rule that accuracy is the first standard requirement of all method, and simplicity the next. Of two accurate methods the simpler is, as a rule, to be preferred for clinical use. In the morphological study of the blood the attention of students is directed mainly to the ways of counting cells, and of differentiating the various types of white corpuscles after they have been fixed and colored by one or another of the stains. Considerable practice is required to attain proficiency in any single method. The expert hematologist who reflexly measures the exact amount of blood necessary for counting white cells, earlier in his career passed through the stage when every step meant as much education as was necessary when he learned to walk. Yet once acquired such methods are extremely simple: a leucocyte count is generally considered the "easiest" work in hematology. Far simpler, however, and much more important than any other single method of studying the blood is the use of fresh unstained specimens. Emerson in his textbook of Clinical Diagnosis says: "Some things can be studied only in the fresh specimens, and more can be studied there than in the stained."

The amount to be learned with a small expense of energy is the only apology needed for calling attention to this subject.

By studying fresh blood the physician is able to determine certain facts impossible with the stained specimen, and at the same time to estimate with a considerable degree of accuracy such important data as the number and relative proportion of the white cells, the number of reds, the relative amount of hemoglobin in the reds, poikilocytosis, and especially the presence of malaria parasites. But before an appreciation of the value of this study in pathological conditions is possible, precise technique and a knowledge of the normal conditions and "normal artefacts" must be acquired. The technique is of the simplest, and depends on absolute cleanliness of the glassware employed. Cover slips preferably $\frac{3}{4}$ -inch square, and slides should be thoroughly cleansed with soap and hot water, then washed in alcohol and ether, and preferably kept in alcohol. At times the glassware received from the agents is so dirty as to require preliminary treatment with concentrated acids. Drying is best done with an old handkerchief or piece of linen free from lint. The best results are obtained by having the glassware slightly warmed by the friction of drying just before use. The blood stickler to be used depends on the custom of the worker; the writer prefers the small lance with a sticking blade about $\frac{3}{8}$ or $\frac{1}{4}$ inch long. The same precaution as to the choice of site of the puncture, and the avoidance of cyanosis or edema must be maintained as is necessary with leucocyte counting.

The size of the drop should be about that of a pin head. The fingers ought not to touch the glassware; the cover slip held in a small forceps is allowed to touch the drop of blood, avoiding carefully the skin. The cover is then gently dropped on the slide, and if the preparation is well made the blood will spread in a thin uniform film almost to the edge of the cover slip. The drop should never be so large as to spread beyond the cover, and one must never attempt to press on the cover slip or manipulate it in any way. It is important that the blood does not extend quite over the whole surface of the cover slip, as the cells vary in their distribution and the whole drop should be studied. The preparation thus made can be examined at once under the oil immersion lens, or will stay for one to three hours, though it is better to put a little vaseline around the edges of the cover slip if the study is to be deferred. The sooner one is able to look at the specimen the more rational will the interpretation be, as the recognition of the gradual production of degeneration forms is of the greatest importance.

The whole value of the study of fresh blood depends on differences that cannot be based on mathematical calculations, but must be dependent on comparative observations. It takes only a few examinations of normal blood to recognize the approximate normal proportions, the shape, size and color of red cells, etc. It is wise always to employ the same microscope with as closely as possible, the same light, especially if one hopes to estimate the relative hemoglobin content of the individual cell. The

normal red cell is of a fairly constant size of 7 microns with a slightly greenish yellow tint. The shape rarely varies to any extent. In a well made specimen rouleaux formation should not be seen, but occasionally one finds blood in which it seems impossible to avoid this. If the specimen is allowed to stand for some time, some of the most interesting pictures ever seen under the microscope appear. The indented ragged edges of a crenated cell generally indicate mechanical injury, but may mean lessened resistance on the part of the cells. A rather common type of cell is the "thornapple," differing from pure crenation in that not only is the rim involved, but the entire surface of the cell seems covered with prickles, or at times only a single stem sticks out from the surface. The common dumb-bell shape is caused by the cell rolling on its side: the biconcavity of the cell explaining the peculiar appearance. Marked variations in size of the red cell in normal conditions are rare. The presence of very small or very large cells generally indicates pathological disturbances, and will be discussed later. Likewise changes in shape of the healthy cell (poikilocytosis), are rare in a well made preparation, but may at times be seen. It is of considerable diagnostic importance to note whether such changes are present as soon as the preparation is made or appear only after it has stood. The pathological significance of a true, spontaneous poikilocytosis will be commented on later; artificial poikilocytosis may be seen in any specimen, and is due, as a rule, either to pressure or to age of the specimen. Slight elongation of the cell with pointing of the ends so that adjacent cells touch is common; but this is undoubtedly a mechanical effect, as can be demonstrated by slight manipulation, causing a current in the field.

Any specimen, no matter how healthy it may be when first made, will develop, usually 30-70 minutes after standing, degenerations inside the red cells, that at first sight are most puzzling, and often are extremely difficult to differentiate from malaria parasites. These "endoglobular degenerations" may be seen as small or large hyaline like bodies generally occupying the center of the cell. They usually are round; but the size and shape may vary greatly. Some are small rods like bacteria, some small bodies, others large, and with bizarre shapes. Motility is not uncommon, but they are never amoeboid. Careful focusing reveals them usually as highly refractile, changing size on focussing. This change in size is never seen in parasites, and is one of the most valuable differential points in diagnosis. Another important fact about these endoglobular degenerations is the marked increase in their number during observation. A specimen which studied immediately shows none of these bodies will shortly show a few, and finally more and more red cells become "invaded" in a manner that is impossible in malaria.

The total count of the white cells can be estimated fairly well by their relative number to the field, and with a little practice it is not at all difficult to recognize a normal count, leucopenia or leucocytosis. To properly estimate the number of white cells it is necessary to look over the whole

preparation, for the well known tendency of leucocytes to congregate will otherwise give a wrong impression. Occasionally, despite the greatest care, this tendency to clump will mislead the observer, but on the whole, the writer has found that it is not difficult to estimate "normal counts" (6000-8000) "below normal" and "above normal." When apparently above 10,000 a practiced observer can approximate the whites within 2,000, as for instance "12,000 to 14,000." In a series of 50 observations controlled by simultaneous leucocyte counts, these estimations were found to be surprisingly accurate.

Not only can the total cell count be approximated, but each individual cell can be classified, and in this particular, it would seem that this simple method is of greater value than stained blood. A polymorpho-nuclear neutrophilic leucocyte shows the hyaline nucleus with shape varying as in the stained specimens; the granules are fine, often moving freely, and somewhat irregular in size. These fine granules can be distinguished quite easily from the coarse uniform sized, highly refractile granules of the eosinophilic leucocyte. Both the neutrophilic and eosinophilic polymorphonuclear cells possess amœboid movements. As a rule the eosinophile is the most actively motile cell in the blood. The small mono-nuclear usually shows the nucleus slightly notched with a very narrow rim of cytoplasm, and often one, or a few small black granules in the cytoplasm; the large mono-nuclears can be recognized easily by the shape of the nucleus, the amount of cytoplasm, the absence of granules, and the size of the cell. These cells can be separated with such ease that were it possible always to prevent currents from disturbing the field, a differential count could be made. In two abnormal blood pictures, which recently came under observation, differential counts were made in the fresh which tallied well with counts made on stained specimens.

"Blood dust" is seen in almost all bloods, and consists of granules of different sizes floating through the field. The size of these grains corresponds with the granules of leucocytes, and it is supposed that they are actually extruded from the leucocytes. One also sees in the fresh specimen fibrin and platelets, often together; the former forming a net work of fine threads enclosing in its meshes the platelets. It is well to recall that in the fresh blood, platelets never are motile.

The most common use to which the study of fresh blood has been put is in the diagnosis of malaria. With a clear picture of the conditions of endoglobular degeneration and of the various types of white cells recognition of a malaria parasite should never be difficult. The morphological characteristics of the type of plasmodium are more clear-cut in the fresh than when stained. It is hardly necessary to urge the precaution of not attempting to find intracellular parasites just during or after the chill; the most favorable time for study is between or just before chills. If blood is studied during or just after a chill, when the parasites are as yet not pigmented, some difficulty will be experi-

enced in distinguishing true parasites from various forms of endoglobular degenerations which may simulate parasites; and negative findings should always be controlled by stained specimens. The best pictures showing these similarities can be seen in Emerson's test book: the main differences are that the true parasite does not change its size on focussing, is not as highly refractile, and one does not see the marked increase in number that is so characteristic of red cell degenerations. Furthermore, the presence of an excess of large mononuclears, some of which may contain pigment granules, and free pigment granules in the circulating fluid are presumptive evidence in favor of the presence of the malaria parasite.

The points of importance in the differential diagnosis of the three types of malaria seen in this country may be briefly summarized in a table.

	TERTIAN	QUARTAN	AESTIVO-AUTUMNAL
Red Cell	Large, pale	Small, brassy, Crenated	Small, brassy, Crenated
Parasite	Very hyaline Very amœboid	Waxy Not actively amœboid	Signet ring marked Refractile Slightly amœboid
Pigment	Fine, light brown Distributed generally Very active	Coarse, black Peripheral Not very active	Fine brown Small amount Usually nonmotile
Segmentation	15-20 Irregular formation	6-12 "Rosette"	Not seen, but characteristic crescents and ovoids are present

In the study of anemias this method gives excellent results. In pernicious anemia undoubtedly more can be learned from the fresh blood than from any other single method, and practically as much as from all others. The marked diminution in red cells is apparent; poikilocytes, micro- and macro-cytes are seen; and as a rule the color index can be well approximated by the amount of hemoglobin in the individual cells. Some care is needed in recognizing nucleated reds, but once seen they can easily be differentiated from any other cell. The nucleus is very pale, not refractile, and the edge is not always sharply cut from the hemoglobin-containing cytoplasm. The same rules as to size of cell and size and position of nucleus which are used in classifications of the various types of nucleated reds in stained specimens apply in the fresh. The characteristic leucopenia of pernicious anæmia can be well appreciated in fresh specimens.

The difficulties often encountered in staining leukæmic blood at times delay the diagnosis, whereas the study of a fresh specimen would in every case give the clue, not only as to the nature of the disease, but as to the predominating type of cell. In various other disease conditions the practitioner will find the examination of fresh blood most valuable. It is easy to carry the necessary glassware in one's satchel, and when the counting apparatus is not handy fresh specimens may be made for study at the office. For instance, in a doubtful case of fever the fresh blood picture put in proper perspective with the clinical findings may absolutely exclude certain diseases and may suggest the correct diagnosis. In abdominal conditions, when the question of leucocytosis is important, the fresh blood is a handy index, but its indications should, of course, be controlled by the actual count. In fact, it may be stated as a general rule that a preliminary study of fresh blood specimens as a routine measure will in all cases indicate the line along which further work is best continued, and will in most instances be of absolute diagnostic value.

IMPROVED METHODS FOR THE EXAMINATION OF SPUTUM AND BLOOD IN RELATION TO TUBERCULOSIS.

By FRANCIS T. B. FEST, M. D., of Las Vegas, N. M.
National Pythian Sanatorium.

Clinical and laboratory findings must cover each other in order to make a diagnosis scientifically correct. Yet this often seems to be impossible, especially so in tuberculosis, where in the incipient case the clinical finding may be negative, while in the advanced case the laboratory finding may seem negative. I say "seem" because the fault is with us and the time will come when our present fallacious methods will belong to the past.

I shall not refer in this paper to the specific methods of diagnosis, but limit myself to microscopic means only.

The belief existed for some time that the Ziehl-carbol-fuchsin stain is ideal. Yet many a case was neglected and treated for anything else but tuberculosis on account of a negative Ziehl. We were aware that in the pus of abscesses the tuberculosis bacilli were not found, yet the tubercular origin could not be doubted. At the same time, this knowledge was not applied properly to the secretions and pus from the lungs. The clinical picture often showed a rapidly progressing pulmonary tuberculosis, yet the sputum seemed to be free from TB. While the Ziehl stain is adequate for ordinary routine work and as a first step to a diagnosis, yet beyond this it is of no value.

To prove this I must go back to the natural history of the so-called bacillus tuberculosis. It is a member of the group actinomyces and belongs to the genus mycobacterium. This genus has the peculiarity of being more or less acid-proof, which peculiarity is most marked in the most important species of the genus, the mycobacterium tuberculosis Kochii.

This peculiarity of being acid-proof is confined to an envelope, a chlamys, which is no vital part of the microorganism itself and the existence of which depends upon age and surroundings. Young colonies and pus seem not to favor the formation of this envelope, which is stained best by carbol-fuchsin and fixed with picric acid. By this fixation the TB often can be distinguished when the fuchsin alone will be negative.

This envelope seems to consist of fatty acids and is of a serous nature. It is more like beeswax than any other known substance because the digestive organs of the galleria melonella have the faculty of dissolving it entirely without killing the germ.

Treated with various solvents, the acid-resistance is diminished and various bodies can be extracted, namely: fatty acids (palmitic and arachidic), acid esters of higher alcohols (palmitic and stearic) and the acid esters of ceryl and myricyl alcohols.

The composition changes according to external conditions. I refer to the work of the older Klebs, and this change of its acid-resistance can be produced artificially (*Fontes, Zenner*). The envelope, when present, stains always with fuchsin and picric acid and b-tolin. Sometimes I have been able to make nice stains with chinaphtalon. Occasionally one can detect the envelope more or less when using soudan iii., indulin 6b, fat-green, gallacyamin and even dimethylaminazobenzol.

This waxy substance is more or less the same in its complex nature in all mycobacteria and has been extracted and used therapeutically by Deycke under the name nastin. The virulence of the TB is not impaired by the absence of the envelope, while its substance has for itself a specific toxic action.

The TB belongs to the class of organism in whose true bacterial body, the mycoproton, when treated with jodin and a rosanilin-derivate, forms a combination therewith and accepts the so-called Gram stain. While the fact that the TB stains with Gram is old, the recognition is of its great importance is relatively new and is mostly an achievement of *Much*, who used it to demonstrate the granulations of the bacterial body of the TB. It is true that the TB is not the only organism which accepts the Gram-stain, most sporulating bacilli do and also the pneumococcus, and others, but there is such a vast difference in their morphologic appearance that a mistake is hardly possible to the trained eye.

A proper preparation of the sputum is of great service. Many aids have been suggested and one of the most valuable is the treatment of the sputum with a hydrocarbon (naptha, benzol, ligroin). The TB, on account of its waxy envelope, will adhere to the hydrocarbon and after shaking the mixture well and allowing to settle, it will be found that the TB have collected just in the separation line between the sputum and the hydrocarbon (Halle and Nitsche).

Of greater value is the method of Xylander and Uhlenhuth, which promises to become general. Many, like Seeman, Meyer, etc., have adopted it. The sputum or pus is mixed with antiformin, which is a mixture of liquore sodii chloratae and sodium hydrate. This brings about a liquefaction of every organism except the TB. All TB will be found in the flocculent masses, which deposit on the sides and the bottom of the glass or a quick sediment can be obtained by centrifugation. In this manner a sputum which has only a very limited number of TB can be examined without the tedious and often resultless process usually employed.

Haserodt combined the use of the hydrocarbon with the use of the chlor-alkali solution.

We have adopted at our institution a routine which so far has been

very satisfactory. Whenever time allows we triturate the sputum according to the method of Xylander, using enough of the chlor-alkali solution to dilute to about 20 per cent. But when time is pressing we take one loop of sputum or pus, one loop of the chlor-alkali solution and three loops of water and rub the mixture fine. After thorough drying the film is fixed with as little heat as possible. The slightest overheating will spoil the film, and for this very reason and to obtain a good fixation at the same time, I have modified the customary technique inasmuch as during the whole process of staining no water is allowed to touch the film.

After this careful fixation we apply my modification of the stain which is a five per cent. alcoholic solution of crystal violet to which five drops phenylamin have been added and the solution filtered. It will be serviceable only for a few days and must be prepared fresh to obtain the best results. The stain is applied hot, and acts for three minutes. The surplus is poured off and an alcoholic jodin solution (2 per cent.) is applied in this manner that the film is immersed face down. This is done to have all precipitation removed from the preparation. The jodin must act for five minutes. The next step is immersion in alcohol face down, decolorization in nitric acid alcohol (30 per cent.), washing in acetone-alcohol, clearing in xylene-phenylamin and, after drying, mounting in the usual manner. All these steps are done with the film face down. Should there be a thick film, the action of the jodin is repeated.

If any contrast is desired the customary tinctions can be used.

This process is not easy at all and it is a satisfaction to know that in the laboratory at Eppingen, where the modified Gram originated, mishaps are frequent. Here, more so than with any other stain, accuracy, patience and perserverance are necessary.

The controversy between Spengler, Fuchs-Wolfing, etc., on one side and Much, Behring, Withs, etc., on the other, about the nature of granula and splitter, ought to be nearing an end. Spengler deserves undoubtedly great merit in furnishing us the picric-stain and by describing fully the splitter and calling attention to their importance, notwithstanding the fact that Koch observed the splitter before him. To Much belongs the credit of having called attention to the granulations and showing us the way to a better knowledge of the morphology of the TB. Fuchs-Wolfing and others claim that the splitter and granula are identical. While this is not quite correct in one sense, yet there exists the same relation as between the rods stained red and the granula-chains stained with Gram. In one case the envelope is stained and in the other the bacterial bodies.

It is known that the TB, when stained in the usual manner, presents a difference in the density of color, sometimes like vacuoles and sometimes like spores. Weigert's stain will show spores. They were considered by some to be Babes metachromic and Ernst sporogenic bodies, by others, Betegh and others call them true spores. They are evolution

forms of the TB. The TB multiplies, as a rule, by transverse fission; in cultures apparently, also otherwise producing the dichotomous branching. This fission occurs within the envelope and therefore the granula can be compared with chlamydospores within a dhlamydobacterium. The splitters are nothing but divisions or fragments of the rods which have retained an irregular shape on account of the waxy nature of the chlamys.

I have made experiments which are conclusive and invite corroboration by others repeating same. Stain a sputum, which is known to be rich in good rods, with gentian-violet-anilin-water; make sure of producing an intense coloration and register the rods with the mechanical stage. Remove the oil with xylene-alcohol and apply Gram.

The very rods which appeared purple first will now show mostly as granula-chains, some may appear bipolar and many independent granula will be seen.

We can go further. Stain with the picric acid fixation, register the location, remove the oil and apply Gram. Now the former splitter, not entirely decolorized, will show as granula of various size.

What Deycke said about the rods is true about the splitter, the Gram will show the bodies of which the fuchsin showed the envelope.

What we learned in regard to sputum and pus can be applied to the blood. Only a few years ago no less authority than the great diagnostician, Sahli, claimed that TB are found only in the blood in acute miliary tuberculosis, and there in small numbers. Cornet held a similar view, which was the opinion of the day. Rosenberger claimed early this year that he found TB in the blood of every case of tuberculosis, even in the very incipient. Forsyth was not able to find them in all cases, and we had about the same result. This simply means that there were so few that they were not brought within the field of the microscope. It stands to reason that a very limited number may escape the most careful searcher.

On ground of recent experiments, Neumann and Wittgenstein, it stands also to reason that TB may be in the circulation and not produce any symptoms at all, and not produce any lesion beyond the local in the pulmonary tissue and produce new lesions there. It has been demonstrated that the pulmonary tissue differs from all other organic tissues by its having a predilection for tubercular infection and that therein the TB can retain its virulence for a long time. I refer to the old burial experiments of Malet-Codeat, Falk, Schottelius and the new work by Neumann and Wittgenstein.

There is no reason unless the local focus be encapsulated hermetically, why some TB should not enter into the circulation all the time in every active case where they either become attenuated, destroyed by phagocytotic processes, or, not so frequently, lead to new infections but producing all the time antibodies which in return assist in their own destruction.

Here I must refer to the report of Hugenuin, who found numerous TB in the arterial circulation of a six month fetus, from a mother in ad-

vanced phthisis, but neither placenta nor any fetal organ showed microscopically or macroscopically any sign of tubercular lesion.

Systematic examinations of blood lead us to the discovery that the number of various microorganisms in the circulation is astonishing. To avoid errors it is always best to use the Gram stain. This is customary with us and led to the additional discovery that the pneumococcus-like organism is the most frequent and its number seems to be in relation to the febrile condition of the host. Therefore, for an exact diagnosis, a careful study of the blood will be necessary in each case; the mixed infection needs more careful investigation, and such investigation may lead to the unexpected deduction that the TB is less destructive than its mate and the prospect seems brighter again that this mate is less resistant to active therapeutics than the tenacious TB.

The pneumococcus is recognized by its retaining the Gram stain and morphologic character. Ordinarily it may be mistaken for the micrococcus catarrhalis, but this does not stain with Gram. Wirths, and especially Webb, in his excellent article in Klebs' new book, laid more stress than others upon the import of the mixed infection caused by the pneumococcus or a similar organism. They, however, viewed same only from its relation in the sputum to the opsonic index. I consider its significance by its number in the circulation. There is no desire on my part to lower the importance of studying the opsonic index in every case where a specific therapy may be indicated. I call attention to the information which may be gained by a close study of the blood along these lines. The bacteria can be counted and this gives us the possibility of an index of the severity of the infection.

We are using in this institution a technic which is rather primitive yet and open to much improvement. Some result can be obtained by the use of the ordinary counting cells and a good one-eighth immersion objective; but only a well trained microscopist will derive any satisfaction. We are experimenting with modifying the cells in a manner which may permit the use of higher powers by approximating the ruling to the objective.

I have worked out a technic, which, while somewhat complicated, is fairly accurate and serves our purpose well. A melangeur, as used ordinarily for the leucocyte count with the Thoma-Zeiss hematocytometer or its modifications, is filled with blood to the 0.5 mark, followed by a citrate dilution to 11. Of this blood-dilution one millimeter is measured off with either an accurate hematocrit scale or a fine pipette which I marked especially. The melangeur of the antiquated Gower instrument is sufficiently fine. This millimeter of dilution is distributed on a warm slide in the manner that a row of finest touch films are made. As a rule one millimeter will make about eight. The smaller these films, the more easy the counting will be. The films are allowed to dry and fixed with a three per cent. acetic acid alcohol. Heat must be avoided. The staining is done with borax blue.

Several slides are prepared in this manner, the more slides counted, the more accurate the result will be.

Each of these films is thoroughly searched and the organisms counted, which will be relatively easy if pains were taken to make the films small.

The sum of the organisms of all films counted is divided by the number of slides used and multiplied by twenty. The result is the number of organisms in one millimeter blood.

The beginner does well to make the dilution with an accurately graduated tuberculin syringe, this will give an ample supply to insure a series of suitable slides.

A great objection against my method may be that the borax-blue stain allows no differentiation. This objection is overcome by the fact that a differentiation can be made before the count by any suitable method and the educated eye will recognize the proper variety in the count-slides. A certain amount of experience with microscopic technique is necessary and without it no such work should be attempted.

Primitive and crude, as my method may be, it is a step forward because it would be unwise to attempt even to judge the number of bacteria in the circulation by adopting a careless, unscientific and deceiving method like the one in vogue with the examination of sputa, which deceives the patient and his physician by accepting a standard of "a few," "many" or "very many" in one field, which field must vary with each preparation and with the individual who makes the same.

I again call attention to the value of a proper recognition of the pneumococcus. The proteolytic power of the TB is normally less than that of the pneumococcus. The pneumococcus has also a marked hemolytic action; I refer to the green-color-play in the hemoglobin cultures. On the other hand is the attenuation of the pneumococcus more easy and the tenacious virulence of the TB well known. Some claim that the two organisms are to a certain extent antagonistic. This is an error. There exists no enantobiosis between the two; on the contrary, a symbiosis seems to be established. Therefore every improvement in the methods of recognition of these organisms and the creating of indices for same, which will be alike with each worker, is a step forward, no matter how trifling.

Small drops make the mighty ocean.

I must give proper credit and thanks to my assistant, Dr. H. J. Hoag, whose conscientious collaboration made this work possible.

SOME OF THE CUTANEOUS MANIFESTATIONS OF DISEASED DUCTLESS GLANDS AND THE APPLICATION OF ANIMAL THERAPY IN CERTAIN SKIN DISEASES.

By JAMES MACFARLANE WINFIELD, M. D., of Brooklyn, N. Y.
Professor of Dermatology in the Long Island Medical College and Hospital.

The rôle of the ductless glands and their secretions must bear an intimate etiological relation to many diseases, both general and local. The action of the skin, when one or more of these glands are diseased, has made the study of the physiological action of these glands and the application of their extracts one of great interest to cutaneous specialists, and the dermatological literature of all lands is filled with the reports and findings of some of the most brilliant observers in this special department of medicine.

The cutaneous manifestations observed during the course of diseases of the thyroid have for a long time attracted the attention of dermatologists, even before Gull, Ord and Horsley published their classical description of thyroid disease and myxedema, various cutaneous phenomena of unknown etiology were observed and noted; now many of these are known to be caused or influenced by disordered thyroid function.

The dermatoses observed in affections of the thyroid do not always seem to be the direct result of a disordered condition of the gland itself, but rather a sequel of the general systemic changes incident upon diseases of that gland. The irregularity of the circulation, the nervous phenomena are each capable of producing certain dermatoses in one predisposed.

This predisposition may, perhaps, explain why one person suffering from Graves disease will have myxedema, while another with the same thyroid condition will have little or no cutaneous impairment. Perhaps the best known skin manifestations are the edemas; these have been divided into four varieties. First, the edema due to feeble heart action; second, edemas of nervous origin; third, transient edema, and fourth, the true myxedema of Ord. If the heart is weak the swelling of the skin will be limited to the eyelids, legs, and knees. This swelling may become general, either early or late in the course of the glandular disease, and is more or less persistent, and only improves as the cardiac function is strengthened. This edema does not seem to be affected by thyroid feeding. It would seem as though impaired renal function might also be a factor in this variety of edema.

In addition to the cardiac edema just described, there is a non-pitting edema that is confined to the lower extremities, the swelling very closely

resembles myxedema, except that the skin is not dry and branny and does not have the characteristic, translucent appearance; it is not influenced by thyroid feeding, but does improve when the heart is strengthened.

Among the nervous edemas we see examples of transient or fleeting swellings affecting the ankles, feet, back of the hands, eyelids, and the supra-clavicular region; sometimes one side of the face will be attacked alone, again one side will be more swollen than the other; or there will be a circumscribed swelling, evidently of vaso-motor origin, resembling angio-neurotic edema or giant urticaria.

Closely allied to the neurotic swellings are the transient erythematous eruptions met with in the course of thyroid disease, sometimes the erythema resembles urticaria factitia; again it is like the urticarial erythematous type of erythema multiforme. This cutaneous symptom, if once present, becomes worse as the general disease grows more severe.

It is hardly necessary to take up in this paper the consideration of myxedema, for it has been described so many times that but little remains to be said. It should be remembered, however, that myxedema is caused by an infiltration into the deep skin and subcutaneous connective tissue of a mucin. In myxedema the skin is usually dry and rough, with a translucent look; it is, as a rule, harsh and hard to the touch, with often a fine branny scruffiness. The perspiratory glands become inactive until there may be complete anidrosis. The hair grows harsh and dry and eventually there is scalp alopecia. Some authors have described elephantiasis as affecting the legs, labia, scrotum and eyelids, which they claim is not true myxedema because it is not affected by the administration of thyroids, nor is it influenced by any cardiac condition.

Another interesting condition of the skin is hyper-pigmentation. It may be an accompaniment of myxedema, or appear independently. Sometimes the discoloration is as deep as that seen in Addison's disease; again, it may appear only as a few yellowish spots on the arms, face and legs. If the deep pigmentation is from a diseased thyroid, it is rare to see the minute deeply stained spots on the arms, and the mucous membrane is not discolored as in Addison's disease. It has been suggested that when the pigmentation was marked that there was disease of other ductless glands, as the supra-renals or the pituitary body. A few years ago I had the opportunity of watching a case of this character that presented all the symptoms of Graves' disease.

She was a woman past the climacteric; she had exophthalmos, hyper-pigmentation of the skin, but not of the mucous membranes, loss of hair and nails, translucent erythemas, fugitive edemas, and finally scleroderma and sclerodactyle. Autopsy showed cystic degeneration of both thyroid and supra-renal glands.

The pigmentation in Graves' disease occurs chiefly as an excess of the normal pigment of the body, the sites that show this excess are the

orbits, face, neck, areola of nipple, abdomen and flexors of the arms and legs. It is also liable to occur on those parts of the skin exposed to constant pressure of the clothing. The discoloration varies from a yellowish tint to a deep bronze, sometimes the pigmented patch fades imperceptibly into the skin, then again there is a sharp line of demarcation. In some cases where the hyper-pigmentation is very marked there is associated with it patches of leucoderma. Atrophy of pigment (leucoderma) is also seen in other thyroid diseases. This is undoubtedly trophic in character, for it is often associated with circumscribed patches of baldness (alopecia areata).

Universal loss of hair is seen in advanced thyroid disease. This may occur without myxedema, and localized baldness, with or without pigmentary changes, is met with early in the disease. Cases have been reported where enlargement of one lobe of the thyroid, with projection of one eyeball was accompanied with loss of hair, eyebrows, and lashes of the corresponding side.

Hyperidrosis is one of the common symptoms of some thyroid disease and is more marked in the severe cases, where there is tachycardia, pyrexia and emaciation; it is a manifestation of a profound vaso-motor instability. The sweating may be local or general. Often the skin is bathed in a sticky, greasy sweat, similar to that sometimes seen in general paralysis. Cases have been reported where the sweating affected only one side, usually the right, corresponding to the unilateral thyroid enlargement. Other cases have been reported where under excitement the sweating was limited to the right leg below the knee. With the sweating, there may be transient flushing of the face and the subjective sensation of heat. This somewhat constant stimulation of the sweat apparatus has in some instances produced a chronic inflammation and disease of the sweat glands, hydro-cystoma.

Pruritus is occasionally a symptom of Graves' disease and is usually found in those cases where the skin feels dry and harsh, resembling symptomatically that of pre-senile skins.

Another skin condition that has not been very extensively noted by authors in an eczematous-like erythema, that may remain a constant symptom or else precede the myxedema. It bears clinically a close resemblance to erythematous eczema; usually affecting the hands, face, and sometimes the flexures of the joints. It differs from erythematous eczema in not being especially pruritic, although subjectively the skin feels hot and tight; at first, there are no evidences of edema, and the process does not appear to be especially inflammatory. This exanthem is sometimes preceded by the transient angio-neurotic erythema spoken of above. It may remain only a short time, or persist for several days and finally disappear with or without treatment. If there are a number of attacks, each subsequent attack remains longer than the previous one, until the dermatosis becomes permanent without any other cutaneous change. Or, the eczematous-like spot may show evidences of swelling

that continues until a true myxedema is established. I recall a case where this erythema persisted for over two years, and was not influenced by any treatment until attention was called to an enlargement of the thyroid when the cutaneous condition quickly yielded to the proper medication.

Although this eruption bears a close clinical resemblance to eczema, it differs from it in not being pruritic; there is never any exudation and it is rebellious to treatment directed toward the relief of ordinary eczema. I am of the opinion that it is a distinct dermatological condition sometimes seen in certain cases of thyroid diseases. This statement is made after a careful study of personally observed cases and of those reported by others.

If a victim of thyroid disease develops myxedema, and if the swelling of the skin be long continued, true eczema does attack the infiltrated skin, especially that of the extremities. This is a true catarrh of the skin and presents all of the classical symptoms of eczema; it is secondary to the infiltrated and swollen skin, and is quite similar to the eczema often seen in elephantiasis.

Scleroderma is another cutaneous complication of thyroid disease. The hardened skin may be in patches, or it may be more generalized. The localized patches called in this instance morphoea, are generally situated upon the face, arms, buttocks or thighs. Cases have been reported where the scleroderma was limited to the hands and feet. The sclerodactyle resembling the condition of the fingers in Raynaud's disease.

Keratosiis and ichthyosis have been observed in patients whose thyroids were not normal, but not necessarily diseased.

Many cases of general ichthyosis of the first and second grade are found to have small and undeveloped thyroids or the gland has undergone cystic degeneration. A few years ago I reported a case of congenital ichthyosis with complete absence of the thyroid.

The patient was the second of a family of five that had this skin deformity. He lived about four weeks. A careful autopsy was made and it was found that the thyroid was entirely absent, not even a rudimentary evidence of the gland was found. The skin from this case was infiltrated with a mucilaginous fluid in which there were found unclassified bacteria. The fluid and microorganisms were principally in the lymph spaces.

People with small or cystic thyroids are likely to have thin and fine hair. This thyroid defect seems in some instances to be congenital. Congenital cutaneous defects as ichthyosis, keratosiis, a scanty development of hair, all indicate arrest of foetal development and are often associated with abnormal thyroids, and the conditions are apt to improve under thyroid medication.

In addition to those diseases which seem etiologically related to the morbid thyroid process, there are other dermatoses that must be regarded more or less coincidences. They are psoriasis, which is often

greatly benefited by the administration of thyroids, acneform eruption on the face and shoulders; erythema nodosum, gangrene, icterus, purpura, and double eruption that first resembles the later stage of measles; this eruption is limited to the feet and legs; after it has existed for a few days it becomes purpuric.

The well-known cutaneous symptom of diseased supra-renals, hyperpigmentation, attracted the attention of dermatologists, and led them to think that perhaps other little understood dermatoses might be caused or influenced by diseases of one or all of the other ductless glands. Diseased suprarenals are not productive of many skin symptoms. Hyperpigmentation is common; scleroderma a rare complication. Cases have been reported where the loss of hair was marked. This was only observed in the advanced cases. Pruritus has also been noted especially when the hyperpigmentation is very dense.

Bronzing of the skin, clinically the counterpart of that seen in Addison's disease, has been reported as a symptom of diseased pituitary gland. The production of adipose tissue clinically simulating myxedema has also been noted as an accompaniment of disease of this body. Recently some French observers have suggested that von Recklinghausen's disease, neuro-fibromatosis, was in some way etiologically connected with diseases of the pituitary. It would seem that further study of the subject might prove the suggestion to be a fact, for in the true Recklinghausen's disease there may be exostoses of the bones of the face and head, as well as the neuro-fibrous connective tissue tumors of the skin, this condition resembling the osseous and cutaneous changes seen in certain cases of advanced disease. If this disease can be placed among the cutaneous disorders influenced by diseases of this gland, it is fair to assume that subjects with simple fibromatosis (*molluscum fibrosum*) may be found to have either diseased or abnormal pituitaries, for if these skin tumors are congenital, or develop shortly after birth, the individual is, as a rule, of deficient intellect, the mental condition being similar to that seen in myxedema.

I have endeavored to briefly enumerate the principal skin affections seen when there is either disease or defects of the ductless glands, but as the study of this subject continues, it is fair to predict that other glands, the "ducted" glands, the testicles and ovaries, and perhaps even structures, as the blood marrow, will be found to have some etiological influence upon some of the less well understood skin diseases. It is a well recognized fact that women with rudimentary or fibrous degenerated ovaries are apt to be victims of hypertrichosis, while in the male is found atrophy and scanty development of hair, if the testicles are rudimentary.

It has long been thought that the bone marrow had some influence upon the development and well being of the hair. Of course, the latter has no scientific basis, but the common empirical observation can easily be made a scientific fact.

While we may decry the exploiting of certain new drugs or therapeutic methods for business gain, it is often these very things that stimulate ethical men to study the subject, and if more of us were to report our clinical successes and failures, there would be no need for the criticism that this or any other new idea smacked of charlatanry.

Animal therapy has been employed in many skin diseases and often in diseases pathologically different. They have been used in three different ways: (1) empirically; (2) when the dermatosis was merely a symptom of some disorder of some ductless gland; and, (3) in those diseases dependant upon faulty metabolism.

At first the various preparations from the ductless glands were used for all sorts of skin diseases in a haphazard way. Then when the internist began using animal therapy in diseases of the glands as in thyroid disease, it was found that the cutaneous symptoms were ameliorated. Now it is pretty certainly established that preparations from certain ductless glands exert a marked influence upon those dermatoses due to faulty metabolism. There is a certain class of skin diseases, those belonging to the erythemato-bullous type, and those of the psoro-eczematous variety, in which the preparations coming under the head of animal therapy seem to do the most good.

Time will not permit of the enumeration of all of these diseases, one or two from each group will suffice. Dermatitis herpetiformis is an example of the first, and prurigo and certain forms of chronic eczema will serve to represent the latter. All of these diseases upon urinalysis and blood examinations show that they are etiologically influenced by faulty nitrogen metabolism.

Disturbances of the nitrogen partition is most conspicuous in the prodromal period of these groups of diseases, and the patient displays other symptoms of intoxication. Examination of the blood at the same period will show high eosinophilia and lymphocytosis. The skin eruption is only part of the symptom complex and if these patients are put on the proper glandular extract, the skin symptoms will subside, the eosinophilia becomes lowered and the urinary evidences of unbalanced metabolism disappears and often a skin that has withstood all sorts of treatment will clear up and remain well.

There is no more use to employ animal therapy empirically in dermatology than in any other special class of disease, for one can only hope to get results after a thorough scientific study of the subject, and I will be pardoned when I say, that my dermatological confreres have contributed considerable toward elucidating the subject of animal therapy.

RHEUMATISM IN YOUNG CHILDREN.

By DAVID E. BRODERICK, M. D.,Pediatrist to the St. Luke's and Post-Graduate Hospitals, Kansas City, Mo.

The knowledge of existence of a specific cause for any definite morbidity deprives the idealists and the æsthetic theorists of one of their many grand opportunities to twist the skeins of medical facts into unravable cords, and minimize the importance of clinical observation at the bedside.

The great and universal prevalence of that most interesting scourge of children, rheumatism, constitutes a distinct clinical entity, of which so much has been dogmatically promulgated, and in whose name so much rot has appeared in our literature, from the neurogenetic theory of causation of Heuter to the theory, which dismisses its function when it announces that rheumatism owes its existence to the end products of tissue metabolism.

Rheumatism, a specific morbid entity, characterizes itself in children as a specific infection by its hereditary relations, its seasonal occurrence, its climatic and race proclivities, and by the isolation by Wasserman in 1889 of a specific diplococcus, called by Poynton and Payne the diplococcus rheumaticus.

Our intimate knowledge of the peculiarities of the rheumatic infection in children is due to the study and writings of Gee, Barlow and Cheadle, and of later years, to the excellent work of Poynton and Payne; especially to the work of the former at the Hospital for Sick Children in London.

These English observers have cleared the atmosphere of mysticism and draped acute rheumatism with a veil of dignity, an entity possessing a distinct pathogeny; a great and severe infection which may and many times does invalid the entire childhood of hundreds of children, an infection that explains many if not most all of our insidious heart affections of puberty.

The study of the manifestations of rheumatism in childhood and those of adult life, convey in comparison such diversity in findings and in their relative significance, as to render difficult the recognition of the same etiological factor. The joint manifestations, both as to significance of involvement and structures of joint involved, the intimate association of carditis, the wide prevalence of rheumatic chorea, and the occurrence of specific nodules, constitute in association with one another a clinical picture that reveals but slight resemblance to that exhibited by acute rheumatism in the adult. The importance of rheumatism lies primarily, then, in an early and prompt recognition and appreciation of the import-

ance of these findings. To dismiss with a wise and all-knowing nod the complaint of vague pains in the upper quadrant of the abdomen, or in the vicinity of joints, as trivial, without a careful and painstaking examination of the heart, is an omission that will weigh against balancing one's just deserts.

The slight articular involvement in rheumatism of early childhood with the characteristic essential grouping of the main phenomena, *i. e.*, endocarditis and vague articular pains, chorea and endocarditis, nodules and endocarditis and the erythema, demonstrate "wider pathological scope and greater variance" of this specific infection in children. The significance of this wide pathological scope is evident from the higher mortality and the complete or partial disability concomitant to chronic organic affections of the heart.

Wasserman is given priority in describing a diplococcus. This organism has been repeatedly isolated by different observers, notably Poynton and Payne in London, Longscope in America and Meyer on the Continent. Poynton was able to produce in animals a multiple arthritis, endocarditis and chorea by injecting this diplococcus. This important demonstration seems conclusive, at least conclusive enough to satisfy the minds of most clinicians. Whether this organism in culture can be differentiated from the ordinary streptococcus matters little.

Cole cites that from 1903 to 1906, cultures gave negative results in joints and blood in all cases of rheumatism in Johns Hopkins Hospital.

Following the literature, we find in the *New York Medical Journal* (Vol. 83), an excellent summary of the different views of various observers on the character of the infective agent, to-wit:

- I. An infection caused by the ordinary streptococci or staphylococci with their virulence in some way decreased.—Menzer, Von Leyden and Sahli.
- II. Infection by a specific bacillus.—Achalme.
- III. Mixed infection with bacilli and cocci.
- IV. An infection with a specific coccus.—Poynton, Payne, Beaton Walker, Meyer, Wasserman and Longscope.
- V. An infection caused by one of a group of closely allied organisms probably diplo- or streptococci, which cause various grades of arthritic trouble.

It is ably contended by Poynton that the diplococcus of rheumatism is capable of producing broncho-pneumonia, pleurisy and peritonitis, experimental heart disease, including myocarditis; and he also supports the view that simple and malignant endocarditis are but stages in the same process. I wish to emphasize this most important contention that simple and malignant endocarditis are but degrees of the same process. This view will clarify the atmosphere and reports of malignant endocar-

ditis cases will not be so rare in our literature. Von Leube, after very careful elaboration, reaches the most disappointing conclusion—that the embolic findings may be common to both, the one causing an infective infarct with pus formation, the other causing a simple infarct with subsequent infection with pus formation; the differential diagnosis is problematical.

I desire to present a case in point: Jack B., age two years, six months. Patient was a full term, normal child, perfectly well until two years of age. Mother about this time noticed a gradually increasing pallor. He complained at the time of vague fleeting pains located at various places but mostly in the feet. The mother noticed no inflammatory reactions in or around any joints. Was languid and listless and suffered from slight dyspnea on exertion. I saw him in consultation with Dr. Park McDonald six months subsequent to the appearance of the first symptoms.

For the last six weeks he has been complaining severely of pain in the upper quadrant of the abdomen. His mother has noticed some distention of the upper part of the abdomen. The little patient has been running a continuous temperature ranging between 99° F. and 103° F. to 104° F. Pulse 120 to 160.

Status Præsens. Child is extremely anemic. Very irritable. Poorly nourished. Long eye-lashes, hairy skin. No swelling of joints, no petechiæ or ecchymoses. No enlargement of lymphatic glands or tenderness over bones.

Heart. Action rapid. Apex beat one-half inch to left of nipple line. Right border at left border of sternum, base at upper border of third rib. No thrill. Loud blowing systolic murmur at apex which is limited to area of apex; second pulmonic not accentuated.

Chest. Well formed. Normal anteriorly. Posteriorly, the left base is dull. This dullness reaches as high a line through the sixth dorsal vertebra extending into the axilla. Over this area there is normal breathing.

Abdomen. The bladder had not been emptied for sixteen hours, and the child resisted all efforts at abdominal examination. After bladder had been evacuated he was much easier. The left half of the abdomen is more prominent. There is slight abdominal rigidity and some tenderness, especially marked in the left hypochondriac region. On palpation a mass could be readily detected filling the entire left quadrant. The lower border extended as a transverse line through the umbilicus. Its upper border was lost beneath the costal margin. It bulged the left loin. The borders were hard but no notch could be detected. The anterior border came as far forward as a vertical line through the nipple.

Blood Count. Hemoglobin, 55 per cent.; reds, 3,300,000; leucocytes, 20,200. Differential of 500 corpuscles. Polymorphonuclears, 56 per cent.; large lymphocytes, 39 per cent.; small lymphocytes, 0 per cent.; transitionals, 9 per cent. Mast cells, eosinophiles and myelocytes not

present. There was marked poikilocytosis, irregularity in size, a few polychromatic reds. No nuclear reds. Blood plates are excessive. No malarial parasites.

Urine Examinations. Many were made. The following is typical of all of them: Slightly opaque, Sp. Gr. 1022. Minute trace of albumin. No sugar. Urea 15 grms. A few pus cells and granular casts and hyaline casts.

Weight, 26 pounds.

The diagnosis made at this time was rheumatism and splenic enlargement due to anemia. The subsequent course caused me to change this diagnosis to tubercular peritonitis with a terminal tubercular meningitis, or rather, tubercular mass in the brain.

Course. I saw the patient for the first time August 10th. He continued about the same up to September 3rd. At this time he had three severe vomiting attacks without ascertainable cause, followed by enlargement of the liver which rapidly reached two fingers' breadth below the costal margin. The spleen was gradually decreasing in size from the time I saw him.

September 11th, the following note was made: "Boy has been in bad condition for the last four days. Has been vomiting for three days. Following the cessation of vomiting, edema of feet and legs, with puffiness of eye-lids. The urine examination showed no change from the specimen reported. This vomiting made me suspicious of tubercular meningitis. The heart remained the same, except that a thrill could be detected over the base of the heart. No pericardial friction. No pulsation of the liver."

Sept. 12. More edema in left leg than right; is stuporous at times. Patient is passing only from 4 to 6 oz. of urine in 24 hours. Examination of urine unimportant. There is no enlargement of the right heart..

Sept. 13. After eight fluid movements and two profuse sweats in hot blankets edema disappeared. Boy is much better; appetite is returning though capricious.

Sept. 14. While eating was suddenly paralyzed on left side. Stupor supervened with motor aphasia, head turned to right side, eyes (both) away from paralyzed side, complete paralysis of left side including paralysis of the face on the same. Pain, sense of position, tactile sense preserved in paralyzed side. The paralysis is flaccid. Head is retracted with rigidity of the neck muscles. Pupils contracted. Croup breathing. No irregularity in pulse (160) or respiration (68); temperature 104° F. (Rectal).

Sept. 18. No improvement. Retraction of head more pronounced. Herpes of right ear. Eyes straight. Stupor not increasing.

Sept. 22. Reflexes increased. Ankle clonus. Herpes on both ears. Complains severely of pain in the abdomen at times. Is more stuporous.

Sept. 28. Boy is bright but very irritable. Still some rigidity of neck

muscles. No change in paralysed side. Distinct hyper-esthesia of non-paralyzed side.

Oct. 7. Much worse. Profound coma.

And death on October 10.

At different times during this little child's illness there were pronounced articular manifestations involving the ankles, fingers and right hip. No inflammatory reaction was present around or in the joints but there was pain and rigidity, e. g., in the hip. This only lasted for a few days and occurred prior to his embolic manifestations. The specimens demonstrate beautifully the finding of a malignant endocarditis with infraction of the spleen. The abscess of the spleen gradually contracted until it was merely two fingers' breadth below the costal

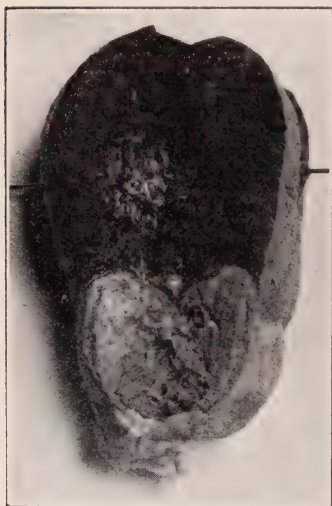


Fig. 1.

Fig. 1. Cut surface of spleen, showing infarction with abscess formation and contraction following. Streptococci were isolated from the pus.

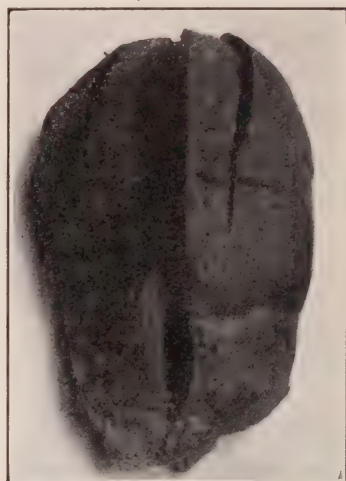


Fig. 2.

Fig. 2. Same as Fig. 1. Spleen, showing outer surface. Demonstrates the sharp line of infarction.

margin. There was an abscess in the left hemisphere of the brain. The main essentials are merely enumerated in order to emphasize the importance of the contention of Poynton that simple and malignant endocarditis may be but stages in the same process.

Sex Incidence. The English Collective Investigation, quoted by Cheadle in Allbutt's System, give the following statistics: "In the first period of from one to five years of age, boys preponderate in the proportion of 5 to 1. In the next quinquennial period from six to ten years, they become nearly equal, the proportion of 15 to 14. In the next period of eleven to fifteen years, there comes a remarkable change, the

proportion is suddenly reversed, the girls suffering in the proportion of nearly 2 to 1."

There is a true placental transmission, e. g., a woman in the last months of pregnancy and suffering from acute articular rheumatism, gives birth to a child with an acquired heart lesion.

Cheadle, to whom we owe much, contended that the greater the hereditary factor (rheumatism in both parents) the greater the susceptibility and the more severe the course.

Frequency. Dr. George Still of London has computed that twenty-five per cent. of all medical admissions in the Hospital for Sick Children were for rheumatism, and from fifteen to twenty per cent. of these have or develop chorea.

Symptomatology. (I.) Fleeting pains, definite or indefinite in location. When assigned to joints there may be no inflammatory reaction of tissues.

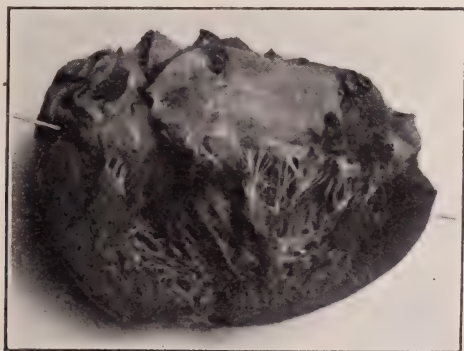


Fig. 3. Vegetations on mural surface and free edges of valve of left heart. Tricuspid, aortic and pulmonary valves normal.

(II.) Pain in abdomen, often spasmodic and radiating. No findings in the abdomen. Still assigns these pains to a catarrhal gastritis. No nausea or vomiting.

(III.) Endo-, peri- or myocarditis in successive stages, or the solitary presence of an endocarditis. Embolism may be the first manifestation of an endocarditis. The degree, character and continuous presence of this murmur offers no criterion for judgment of the degree of defect of the valve segments. I believe with Hochsinger in the nonexistence of haemic or functional murmurs in children. Any systolic murmur not cardiopulmonary in origin or extracardial in origin, e. g., pressure murmurs, can be safely concluded as organic and subject to our general knowledge of interpretation of location.

I wish to call attention to the wider prevalence of mitral stenotic murmurs in rheumatism. I had the good fortune to study several of these cases in Dr. A. E. Garrod's ward at the Hospital for Sick Children in London. The murmur is often soft and blowing, middiastolic in

time, and eventually ends in a true presystolic murmur of the adult type. It may disappear for a time. Its recognition is vastly important from a prognostic point. An *X-ray* picture of the heart is of great assistance in our summary of the condition of the right heart's compensation. Poynton has called our attention to thrombosis in the rheumatic heart without valvular lesions, and to the possibility of embolism without a vegetative valvulitis.

The existence of great residual power in the cardiac muscle of children is sorely hampered by the toxicity of the diplococcus rheumaticus, and we find cardiac dilatation in most all the fatal cases. Broadbent analysed the post mortem records of 150 cases of rheumatic hearts and found dilatation usually present. Myocarditis is always present.

Pericarditis. The importance assigned to pericarditis is fully justified as a cursory search of the post mortem records is made. The presence of fluid is comparatively uncommon. In the 150 cases of fatal heart affections (rheumatic) reported by Sir William Broadbent, only twelve demonstrated more than two ounces of pericardial fluid.

The presence of obliterative pericarditis, and the not uncommon pathologic condition which accompanies it, mediastinitis, are of grave moment. In regard to the frequency of pericardial adhesions, I quote the report of "150 post mortem examinations in rheumatic diseases of the heart. 113 of these had slight adhesions and 77 had complete adhesions." The importance of slight adhesions is perhaps exaggerated and we tend to minimize the importance of the ever present myocardial changes. The total obliteration of the pericardial cavity with the formation of a thick fibrous sac surrounding the heart and acting mechanically to prevent development is splendidly exemplified by the teaching of Cheadle. I have in my notes the following autopsy record:

Girl, age 12 years. Deposits of gelatinous masses beneath sternum in the areolar tissue; a like deposit on the under surface of the diaphragm and supper surface of the liver; also some small deposits in the pleura. This gelatinous material is of a peculiar yellow color, the consistency of gelatin and is, I think, identical with the contents of the rheumatic nodules. The pericardial cavity is obliterated by old fibrous adhesions, the heart being iced by same. There is a tubercle in the bronchial gland. There is a marked enlargement of the right heart, extending almost three finger breadths to the outside of the right sternal line. Slight hypertrophy. Evidence points to old valvular lesions. There is thickening with deformity of the mitral and tricuspid valves. The left auricle is greatly dilated. There is hypertrophy and slight dilatation of left ventricle. There is a stenosis of the mitral valve. Aortic valve normal. Upper surface of liver has thick fibrous covering and spleen capsule is also thickened.

Anatomical Diagnosis. Obliterative pericarditis with mediastinitis; mitral stenosis and regurgitation; tricuspid regurgitation with marked

cardiac dilatation. The clinical course of this case is most interesting as demonstrating the very grave danger of allowing a patient with marked dilation of the right heart to get out of bed. This patient was given permission to get up and within twenty-four hours she was dead from an acute dilatation of the heart (right). There is no doubt but that the obliterative pericarditis and mediastinitis were the essential factors in this marked dilatation.

Difficulty of Diagnosis. The rugæ-appearing pericarditis gives a distinct to and fro murmur, and there is no occasion to confuse this with a supposed pneumococcic pericarditis for the latter never has and never did have a friction murmur. The character of the exudate allows the occurrence of no such findings. Many cases have appeared in our literature which must have been rheumatic and not pneumococcic.

Another very interesting finding in paricarditis with effusion, is the occurrence of a rheumatic pneumonia or a gradually increasing area of dullness commencing in the lower left lobe of the lung. Attention was first called to this finding, I think, by Cheadle. I have notes of the following case, seen with Dr. Garrod in his ward at the Hospital for Sick Children, London:

Boy, age 6 years. Three weeks before Christmas, 1907, was complaining of pains in the legs. Mother noticed no swelling of joints. In about a week or ten days had recovered and was playing as usual. A week after Christmas, 1908, the pains in the legs returned and there developed a hyperesthesia. The boy would cry out when touched; pains also in arms. No diarrhea or vomiting. No hæmaturia or blue-gums. He complained of some dyspnoea on exertion. Temperature 101° F., pulse 140, respiration 48. Urine normal. Some tenderness in right iliac fossa.

Heart. There is a marked area of dullness extending one finger breadth to left of nipple line, and two finger breadths to right of right sternal border. The dullness extended as low as the lower border of fifth interspace and over sixth rib. There is almost complete flatness over this dull area. There is a typical to and fro friction sound over and above this dullness. The apex beat indistinct. In the course of two weeks this dullness was diminished, a mid-diastolic murmur was heard and within the apex. Two days previous to this time a small spot of consolidation was revealed by percussion in the lower portion of the left lower lobe of the lung. Over this area there was bronchial breathing. A week later this had increased until two thirds of the left lower lobe was involved. There were no constitutional symptoms. No especial elevation of temperature (99). This finding must be in the nature of an atelectasis.

The English literature abounds in the citation of numerous cases of rheumatic nodules, but in our country they are rather rare. I have personally seen in London a case of endocarditis and chorea showing

at least one hundred well developed nodules. The erythemas, excepting erythema marginatum, are of doubtful rheumatic origin. In the ten cases of erythema nodosum which I have seen, there were present no valvular finding nor had they had chorea. Time forbids entering into a general discussion of chorea, but suffice it to quote from Sir William Gowers, that valvular disease is found in 90 per cent. of all fatal cases of chorea, and the presence of rheumatism in 29 per cent. of the cases before the advent of true chorea.

Prognosis. The prognosis is intimately dependent on the individuality of the observer, the significance assigned to all indefinite pains around joints and especially abdominal pains in very young children, the systematic examination of the heart in all children, the social status, climatic conditions, the hereditary factor, the presence of nodules, pericarditis, etc. The character of the heart lesion, the liability of girls to break down at puberty, and the judicious management of right heart dilatations. If these factors are borne in mind, our prognosis may show radical difference from that given in text-books.

Treatment. Salicylates with double the dose of sodium bicarbonate should be given in large doses. I have seen a child of five years taking six hundred grs. in the twenty-four hours, with double the dose of sodium bicarbonate to prevent acidosis. A child should at least get from 40 to 60 grs. in the 24 hours.

Allow me to close this paper with the citation of a typical case of acute rheumatism in a child of three:

E. S., age 3 years. The daughter of a physician. The child has been perfectly healthy since birth. Uric acid diathesis in mother. Mother is said to have had mitral regurgitation. Paternal grandfather died of acute articular rheumatism at the age of 37. Child had been confined to her bed two weeks previous to consultation. She was put to bed for fever, abdominal pain and some slight distress around the joints. For a few months previous to confinement child had suffered from a few attacks of tonsilitis, had often ceased play with the complaint of being tired and was at these times listless and inclined to lie down. She complains of chilliness. She is cool to touch, acid perspiration and is of high nervous tension. Temperature has been ranging between 100° F. and 103° F. Pulse 100 to 120. Slight cough. Constipation. Stools contain much mucus.

Healthy looking female child. M. M. good color. Very bright mentally. Prominent abdomen. Lungs normal.

Heart. No thrill. Apex beat outside of nipple line. Cardiac dullness extends one finger breadth beyond nipple line. Right heart not enlarged. Upper border of cardiac dullness slightly elevated if at all. There is a soft blowing systolic murmur heard best immediately within the nipple line at the apex. The murmur is transmitted to the axilla, is unaffected by position or pressure; holding the breath does not affect its intensity.

There is an accentuation of the second pulmonic. Spleen is palpable, extending two finger breadths below the costal margin. The systolic murmur is appended to the first sound of the heart.

Blood. Reds, 5,000,000. Leucocytes, 11,400. No malarial parasites or Widal.

Urine. Normal.

She was placed on 40 grs. of salicylates with double the dose of sodium bicarbonate, and within four days the temperature was normal. Two weeks later the following note was made:

Cardiac dullness within nipple line. Systolic murmur now displaces first sound. Spleen is barely palpable. Mucus has disappeared from the stools. No pericardial involvement. Murmur unaffected by holding the breath, position or pressure. There is an irregularity of the heart and intermittency was noted; the latter did not represent a missed beat of the heart but a hurried or incomplete tone. Has complained of pains in the fingers several times. Fever again occurs after the salicylates are dropped. There developed an acute psychosis, with which I will deal in another paper.

621 Commerce Bldg.

SPECIAL ARTICLE.

INDISCREET CHAPTERS IN HISTORY.

(Les Indiscrétions de l'histoire.)

By DOCTEUR CABANES.

Translated by Dr. Philip Skrainka.

CHAPTER I.

LOUIS XI.

JUDGED BY HISTORY BUT EXPLAINED BY THE SCIENCE OF MEDICINE.

(CONTINUED FROM PAGE 683.)

But though one should not burden oneself with too much testimony in establishing a retrospective diagnosis, there is, truth to say, one other source of information which is not negligible as regards this matter, albeit out of the regular and ordinary course—namely, what I have elsewhere described under the name of hagiotherapy. To cite the authoritative opinion of a master in the matter of historic pathology—an opinion with which I fully agree—"hagiotherapy alone ought never to serve as a basis for the establishment of a diagnosis, though as a supererogatory diagnostic point it is not without great interest, since it confirms diagnoses which are reconstructed by means of symptomatology and therapeutics."* As numerous archives attest, Louis XI. repeatedly invoked the succor of St. John the Baptist, St. John the Evangelist, St. Giles, St. Claude and St. Paul, all of whom were thought to be specifics in epilepsy!*

Could credulity go further? And when we read in a contemporary work from the pen of his intimate friend, the French Ambassador to Rome, that the king was afflicted with "comitial-sickness,"† we surely have confirmation of what many of the accumulated proofs were instrumental in making us suspect—namely, that Louis XI. was an epileptic.

*Aug. Brachet, op. cit.

**Broc de Segange, *les Saints Patrons de corporations, etc.* 2 vols.

†This name is sometimes used because, as some claim, its origin is derived from "the sickness of the comitias," in memory of Julius Cæsar, who while holding comitias at Rome—in Roman antiquity these were assemblies of the people—was stricken with an attack of epilepsy. But this contention is faulty, since the etymology of the word comes from other sources.

And considering that this illuminating idea as to the king's mentality was apparent even amidst the obscurities of his day, a consideration of his other physical weaknesses must be of some interest in a psychological sense.

Louis was "greatly molested by many maladies," says his chronicler, the ambassador to Rome; "he was tormented until his death by many diverse and piteous maladies," asserts another memorialist. The latter has summed up, in a unique phrase, a pathological brief which reads as follows: "*Nam comitiali morbo cum interdum premeretur, elephantia quoque occulta indica præ se ferebat, et hæmorrhoidæ cerebro vexabatur.*"* I have designedly italicized the three principal episodes in the morbid life of a sovereign who was simultaneously or alternately afflicted with epilepsy, elephantiasis (or leprosy) and hemorrhoids.

* * *

From his twenty-fifth year on, the king was affected with bleeding piles which persisted during the remaining thirty-five years of his life. A series of prescriptions has been found which indicates the continual presence of this infirmity. There was no medication that was not tried in the hope of helping him; fumigation and pieces of jasper which were commonly thought to have "excellent virtues to arrest a bloody flux"† were among the means resorted to. But finally the king lost confidence in the intelligence of his regular doctors and consulted a professor of the University of Pavia.‡ And when all the remedies within the knowledge of man proved ineffective the saints of Paradise and St. Martha of Tarascon, St. Bernadine, St. Fiaere were propitiated by valuable gifts, always, of course, in the king's name.

* * *

Louis XI. belonged to the ever-increasing legion of arthritics, not only on account of his hemorrhoids but also because of herpetic and gouty symptoms. That the king had gout is revealed to us in a letter which his daughter Anne wrote to him.§§ For those who know the connection between gout and arteriosclerosis, it is not difficult to predict the final issue. The king, moreover, had deplorable habits: excesses at the table, hunting in winter-time in marshes, continual changes of scene necessitating temporary and hap-hazard lodgings, and, above all, constant excitement due to a mental tension caused by unintermitted war against the enemies of his kingdom. This mode of living could only aggravate his physical and mental state.

*Robert Gaguin, loc. cit.

†Le Grant Propriétaire des choses, I.XVI., ch. LI.; cf. Oeuvres pharmaceut. du sieur Jean de Renou (1637); N. Lémery, Dict. universel des drogues simples, 1679, etc.

‡Henri-Maxime Ferrari da Grado, Une chaire de médecine au quinzième siècle; Paris, 1909.

§§Lamure, Hist. des ducs de Bourbon et des comtes de Forez, edit. Chantelouze, t. III, Preuves, p. 218.

Should we speak here of some of his incidental diseases, of the continuous fever of malarial origin which placed his life in so great a danger that it was thought he was the victim of poison?[†] Assuredly this fact is not too unimportant to note, if one admits that malarial intoxication directly provokes nervous disturbances (Régis) and even convulsions (Bouchard) in those who are predisposed. But there is another point in the king's life that requires clearing up; and since a recent discovery has acquainted us with its true history, the duty devolves on us to elucidate so that further light may be thrown on the subject.

* * *

Memoirs of the time mention "a dermatosis" with which Louis XI. was affected; and although the text of the chroniclers is void of ambiguity, they nevertheless show some hesitancy in naming it. There is no doubt that the disease was leprosy;* a diagnosis moreover confirmed by the diplomat whose knowledge of the king's diseases is trustworthy enough to bear frequent quotation. The king had at a certain epoch ordered pharmaceutical preparations, among others the meal of lupine seeds and "cheeses called angelot." Moreover he had had recourse to the specific saints of skin diseases—St. Marcou, St. Martin and St. Lazare. But what was the precise nature of his skin affection since nothing definite has come to us from any of the old records? Should the diagnosis be vitiligo or psoriasis or ulcers? Many conjectures were made by the king's chroniclers, but not until recent times has a book appeared that is capable of brushing aside all our uncertainties.**

The 8th of July, 1483—the pilgrimage, by the way, has been variously placed between 1472 and 1482—the king decreed the sum of one thousand ecus for his fleet captain, George the Greek, and dispatched him in haste to "the Green Isle" and "the country of Barbary," to acquire "some things which would greatly benefit the health of the royal person." Two ships and a bark placed under the captain's orders set sail from Honfleur with three hundred soldiers, pages and cooks, the expense of the expedition being borne by "the peasants" of the Normandy towns. According to a French explorer who had returned from Guinea, St. Jacques, at that time the only inhabited island of the archipelago, was not only immune from leprosy but many cures had been effected there.

The treatment was simple. The large tortoises which at low-water browse on the herbs near the shore, were quickly and dexterously turned

[†]Dispatch from Jean-Pierre Panigarola to the Duke of Milan, dated Chartres, May 26, 1467 (Bibl. nat., fonds italien, 1649), cited by Brachet.

*In the unpublished Fragments of Th. Basin (Notices et Extraits des Manuscrits, XXIV, 2 partie, p. 20), published by M. Léopold Delisle, is this phrase which can be interpreted only in one way: "Morbo lepre a pluribus fertur infectus fuisse." If this is not leprosy, then the true meaning of the term is unknown to us.

**This has been pointed out to us by M. C. de La Roncière when discussing the matter from a different standpoint in his excellent book, *Histoire de la Marine française*, t. II.

on their backs by the islanders and then killed. "The infected and sick with scaly leprosy" were bathed in the blood; "and when the blood dries on the body," adds the explorer, "the sick find themselves so stiff for two or three days that they cannot bathe anymore, and it is necessary to feed them as one feeds an invalid or a child. Afterwards they are well and remain strong. The internal treatment consists of purging by eating fish and the fat of a leprous tortoise. If this treatment is continued they are cured of the ailment at the end of two years."*

Here we pause to ask, why all this pother to organize an expedition to search for so commonplace a remedy? Now the truth of the matter was that the Portuguese jealously guarded their gold mines, and to prevent the approach of strangers to their shores, they gave out the report, that on account of swift currents certain ships would founder. They also took the precautionary measures of sending their old barks to Guinea, to be dismantled and transformed into caravels so as to be used as another means of defense. And they took good care on July 21, 1481, to renew with Sixtus IV. the privilege accorded them by Nicholas V. of being the only authorized navigators to frequent the coast of Africa and the adjacent islands, from Capes Nun and Bojador to Guinea. Thus can be explained the presence of so many soldiers on board the French vessels: soldiers no doubt more interested in the possibility of a war than the slaying of a tortoise!

But did Louis XI. have leprosy? The expedition to "the Green Isle" confirmed the rumors put in circulation by the chronicler, Thomas Basin.† The success of the expedition was the means of divulging the secret which had been guarded so well; hence there can be no doubt that the king had leprosy. Now the unfortunate thing about the trip to "the Green Isle" was that the king got no benefit whatsoever from his fleet captain's voyage; in fact, he did not even hear of the efficacy of the remedy, for before the expedition returned he had died.**

* * *

The three affections—epilepsy, hemorrhoids and leprosy, not to mention the intercurrent diseases and indispositions which interfered almost without remission in the matter of the king's health, should suffice to explain his invincible longing for solitude, his irascibility, his fierce misanthropy. But despite what disease may do to discourage and even hamper one's desires, his travels from one end of his kingdom to the other bear witness to the fact that, save in the last period of his life, Louis XI. evinced an astonishing activity that should arrest our attention. A hurried diagnosis would pronounce this unrest typical of am-

*Eustache de La Fosse, *Voyage à la coté occidentale d'Afrique, en Portugal et en Espagne* (1479-80), publié par Fouché-Delnosc. Paris, 1897, in-8, p. 18-29 (Extra. de la *Revue hispanique*).

†A nonnullis, prius quam obiret, leprosus fuisse assertus est. (Thomas Basin, édit. Quicherat, t. III, p. 166).

**De la Roncière, op. cit., p. 394.

bulatory insanity, with the same carelessness that is evidenced by certain authorities, when they make mention of zoophilia and even kleptomania, because one day it pleased the king's fancy to issue an order to seize "all the magpies, jays, ravens, and other tame birds."

One hastens to ask whence arose these subtle neuro-pathologic findings, for only a degenerate is capable of having such impulsions "which are the true stigmata of degeneration." Even though one admits the existence of these irresistible impulsions in the case of Louis XI., and asserts hereditary degeneracy in support of their presence, we should only say at most, that too often a habitually bad state of health is the penalty of superior beings. Is it problematic to state that with them the concentrated brain absorbs the largest share of nervous influx, to the great detriment of other organs? As that perspicacious observer, Fernel, said some centuries ago: "*A capite fluit omne malum.*"

Although psychic disorders are to a great degree proof of the miseries of human nature, superior beings conserve at least this advantage over the vulgar, that albeit they may pay a partial tribute to a malady, as was the case with Louis XI. when it led to decay or wear and tear of the organs, they, as great leaders of mankind, are never enslaved by it.

(CONCLUSION OF THE CHAPTER ON LOUIS XI.)

MEDICAL AND SURGICAL PROGRESS.

THE PORTS OF ENTRY OF TUBERCULOSIS IN INFANCY AND EARLY CHILDHOOD.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

1. DIAGNOSIS OF TUBERCULOSIS IN YOUNG CHILDREN.—Shaw and Laird (*Archives of Pediatrics*, July, 1909).
2. RELATION OF INFECTIOUS DISEASES TO TUBERCULOSIS.—Copeland (*Archives of Pediatrics*, July 1909).
3. PRIMARY INTESTINAL TUBERCULOSIS.—Gittings (*Archives of Pediatrics*, July, 1909).
4. FREQUENCY OF ABDOMINAL TUBERCULOSIS.—Bovaird (*Archives of Pediatrics*, June, 1909).
5. TUBERCULIZATION IN YOUNG INFANTS.—Ferrien (*Ann. de Med. et Chir. Inf.*, May, 1909).
6. HUMAN AND BOVINE TUBERCLE BACILLI.—Sweeney (*N. Y. Med. Jour.*, June, 1909).
7. PATHOGENESIS OF TUBERCULAR INFECTION.—Roux and Josserand (*Arch. de Med. des Enf.*, 1909, p. 100).
8. ROLE OF CONTAGION IN TUBERCULAR INFECTION.—Comby (*Arch. de Med. des Enf.*, 1909, p. 161).
9. PORTS OF ENTRY OF TUBERCULOSIS IN THE NURSING.—Escherich (*Wien. klin. Woch.*, 1909, No. 15).
10. CONTACT INFECTION IN CHILDHOOD.—Osteran (*Zeitschr. f. Hyg.*, 1908, p. 375).
11. CONGENITAL TUBERCULOSIS.—Rietschel (*Jahrbuch f. Kinderheilk.*, July, 1909).
12. PORTS OF ENTRY OF TUBERCULOSIS IN INFANCY.—Hutinel (*Arch. de Med. des Enf.*, 1909, p. 481).
13. TRANSMISSION OF TUBERCULOSIS IN CHILDHOOD THROUGH FAMILY ASSOCIATION.—Floyd and Bowditch (*Arch. of Ped.*, March, 1909).

The literature is filled with the discussion of the pathogenesis of tuberculosis in childhood and it seems of interest to review some of the rather divergent views on a topic of supreme interest. There can be no question, at this time, of any generally accepted view, for the greatest diversity of opinion still exists. In general terms, it may be said that the inhalation theory finds most adherents. Shaw and Laird, as the result of their investigations, for instance, find that prenatal, congenital or hereditary tuberculosis are so rare as to be practically negligible. Rietschel finds that congenital tuberculosis is possible when there is maternal placental tuberculosis present, but only then. Foetal infection, once started, may,

however, take several months post-partum to end the picture. Not every placental tuberculosis will cause foetal infection, but this method of infection is commoner than was formerly supposed. The latent tuberculosis of infancy is not a justifiable hypothesis. Congenital tuberculosis always ends fatally in the first six months of life. Von Behring's theory is held to be absolutely untenable.

Shaw and Laird believe that inhalation infection is by far most common. They refer to Holt's figures, who found involvement of the bronchial lymph nodes and lungs in 99 per cent. of his cases. Albrecht had practically the same percentage. Infection occurs through the nasopharynx, tonsils, respiratory tract, or even the alimentary tract. In the home of the tubercular adult, the danger to the child is enormous. Cases of tuberculosis admitted to the New York Babies Hospital showed a history of tuberculosis in the family in 50 per cent. Direct infection through the alimentary tract is probably not so very common. Albrecht, of Vienna, made careful search in 3,213 autopsies in young children, finding primary intestinal tuberculosis in but 1-16 of 1 per cent. of the cases. Albrecht denies the possibility, so strongly urged by V. Behring, Ravenel and others, of tubercle bacilli passing through the intestinal mucosa and the mesenteric lymph nodes and infecting the lungs and bronchial lymph nodes, without leaving any trace in the intestines. Comby, of Paris, with an enormous experience, says that he has never seen a case of primary intestinal tuberculosis. There is a tendency to overrate the danger from milk of tuberculous cattle. The danger of human contagion is very much greater. Gittings says that the decision as to the importance of the intestinal route is still not given. That the tubercle bacillus may reach the bronchial glands by way of the mesenteric nodes and the thoracic duct, has been experimentally proved in animals. But the weight of evidence, both laboratory and clinical, is against the probability of frequency of such intestinal infection. Indeed, the reverse seems probable, considering the number of cows infected with tuberculosis. Either the bovine type of bacillus is of low virulence for the human race, or we must accept the dictum of V. Behring concerning latent tuberculosis in infancy, or what is more probable, we must believe that the bacillus in growing through the gastro-intestinal mucosa meets with many conditions unfavorable for its existence and that the epithelial cells of the mucosa offer a vital resistance to its inclusion and thus to its transmission to the lymphatic circulation.

Discussing the human and bovine type of bacilli, Sweeney finds that the varieties differ in many characteristics. The human subject may, however, become the host for either form, but this is also true of the cow. Tubercular infection (in the human being) of the respiratory tract is usually due to bacilli of the human type, while lesions of the bones and joints and lymphatics are more likely to be due to the bovine bacillus. Terrien agrees that hereditary transmission is negligible. Tracheo-bronchial adenopathy, whether brought from the respiratory tract or not, is, however, not a positive sign of the "pulmonary entrance" of the disease. The ways of entrance include the nasopharynx and the intestinal mucosa, though primary intestinal tuberculosis is much rarer than has been supposed. The principal factor is human contagion. Comby emphasizes this same fact, that all infection occurs through direct human contact. Prophylaxis would thus consist in removing the child from its tubercular surroundings. Escherich also adheres to the doctrine of direct contact, finding that in all cases the history shows that the child has had to do with a tubercular person. Aerogenous infection is primary,

almost always. The primary *lesion* is always in the lungs or bronchial glands, with secondary infection through the blood stream. On the other hand, while believing that aerogenous infection is the commonest form, Osterman holds that direct contact is probably not of such great etiologic importance. He feels that the danger of contagion has been greatly exaggerated of late, and supports his views with the recital of a series of most ingenious original experiments.

Hutinel believes that intestinal infection is comparatively rare, that it can not possibly account for 1-10 of all the cases. He, however, holds that infection through the lymphatic way of the nasopharynx is still rarer. Direct aerogenous infection is the constant type and in nearly every case it is possible to discover the primary "inoculation chancre" in the lung, from which the caseation of the bronchial glands has proceeded. In a discussion, based, it must be said, largely on theoretic considerations, Roux and Jossierand assert that the most frequent mode of infection is neither by inhalation nor through the intestinal route. They believe that the most frequent port of entry is the lymphatic ring of the nasopharynx, and that the second port of choice is the "lower tonsil," *i. e.*, the appendix. Substantiation of their theory is, however, not convincingly adduced.

An interesting statistical study of intestinal tuberculosis is published by Bovaird. His figures (taken from massed hospital records) show that abdominal tuberculosis must be at least eight times as common in Great Britain as in America, France or Germany. His tables are really of importance as explaining the diversity of view as to the original ports of entry. Whatever views be held as to the interpretation of localization of lesions with relation to the pathology of infection, there is general agreement that if infection takes place from milk, we should find a preponderance of tuberculous lesions of the intestines, mesenteric lymph nodes and possibly the peritoneum. This fact has been proven, for all recent investigations of the *type* of bacilli found in human lesions show that the bovine type is frequently found (in 70 per cent.) in lesions of abdominal tuberculosis in children and rarely in other cases. Where abdominal tuberculosis is frequent, there bovine infection is common, but not under other conditions.

Floyd and Bowditch, from a clinical study of 1,000 cases, find that the modes of infection are necessarily various and frequently multiple. The two great paths of infection are by inhalation and ingestion. Whatever the mode of infection, direct transmission (by contact) from parent to child is probably the most important factor. Of these 1,000 cases, 679 had been in immediate contact with tuberculosis in the home. Of this number 36 per cent. showed definite signs of pulmonary consolidation. Evidence of tuberculosis was often found in several children of the same parents. The respiratory tract is not the only vulnerable point. Fifty per cent. of these children had hypertrophied tonsils; 14.5 per cent., in addition, had adenoids without enlarged tonsils. Invasion of the serous cavities (peritoneum and meninges) was found only in two or three cases.

Copeland discusses the relation of the acute infections to tuberculosis: measles, pertussis and influenza are all characterized by catarrhal inflammation of the mucous membranes and by greatly lowered resistance to secondary invaders. In this catarrhal condition of the mucous membranes lies the key to their relation to tuberculosis, in that it promotes the activation of quiescent disease. Infection is thus by inhalation, but in

children the theory of infection must be of great importance. Mesenteric lymph nodes have been shown to contain tubercle bacilli even in the absence of demonstrable lesions. The thoracic lymph nodes are often the primary focus of infection, irrespective of the port of entry. Another factor of importance in the relation of the acute disease to tuberculosis is the lymphatic activity which so commonly accompanies the pulmonary inflammation in these conditions.

RECENT COMMUNICATIONS UPON ORGANO-THERAPY.

REVIEW OF LITERATURE.

By WILLIAM ENGELBACH, M. D.

1. THE INFLUENCE OF THE REDUCTION OF KIDNEY SUBSTANCE UPON NITROGENOUS METABOLISM.—R. M. Pearce (*Jour. Exp. Med.*, 1908, x, 632).
2. HYPOPHYSIS GLYCOSURIA AND ITS RELATION TO THE DIABETES OF ACROMEGALY.—Borchardt (*Zeitschr. f. klin. Med.*, 1908, lxvi, 332).
3. THE THYMUS IN BASEDOW'S DISEASE.—Capelle (*Münch. med. Woch.*, 1908, lv, 1826).
4. SALT METABOLISM IN EXPERIMENTAL NEPHRITIS.—Schirokauer (*Zeitschr. f. klin. Med.*, 1908, lxvi., 182).
5. SPECIFIC STIMULATION OF THE INTESTINAL PERISTALSIS BY INTRAVENOUS INJECTION OF "PERISTALTIC HORMONE."—Zuelzer, Dohrn and Marxer (*Berl. klin. Woch.*, 1908, xlv., 2065).
6. THE INHIBITION OF PANCREATIC ACTIVITY BY EXTRACTS OF THE SUPRARENAL AND PITUITARY BODIES.—Ralph Pemberton and J. E. Sweet (*Arch. Int. Med.*, 1908, i., 628).
7. THE SERUM TREATMENT OF CHRONIC NEPHRITIS.—Casper and Engel (*Berl. med. Woch.*, 1908, xli., 1836).

R. M. Pearce notes the importance of the influence of a possible internal secretion of the kidney, if such exist, upon general nitrogenous metabolism. Up to the present time there is little experimental or other evidence to support such a theory of an internal secretion. Pearce's experiments have been along these lines, that is, in removing amounts of kidney substance sufficient, presumably, to disturb the hypothetical internal secretion. His conclusions are that the removal up to three-fourths of the kidney substances causes no change in the general nitrogenous metabolism, as determined by the estimation of total nitrogen, urea, and ammonia elimination in the urine. The removal of large amounts leads to the metabolic condition of starvation; this, however, is apparently the result of the gastro-intestinal disturbance associated with extensive kidney reduction, and not to a disturbance of general nitrogenous metabolism. The determination of the amount of fecal nitrogen indicates that the gastro-intestinal disturbance is not due to diminished absorption and, except in one instance, there was no evidence of its being due to an increased elimination of nitrogenous substances into the intestine. These experiments then do not support the theory that the kidney furnishes an internal secretion, having an important influence on general nitrogenous metabolism. At least, if such a function exists, it is not disturbed by the removal of three-fourths of the kidney substance. The metabolism in excessive kidney reduction is that of inanition dependent on gastro-intestinal disturbances, presumably due to faulty chemical correlation. In this connection further knowledge concerning the elimination into the intestines of toxic substances is desirable.

It is not quite generally accepted that in acromegaly there is hyperfunction of the hypophysis, which may be of etiological importance. Since many cases of acromegaly are complicated with diabetes, Borchardt considers it possible that the latter may be due to the same cause. To test his hypothesis he has injected extracts of the hypophysis subcutaneously in rabbits. The extract was obtained from the hypophysis of man and the horse. In each animal used, following the injection of a rather large dose of extract, glycosuria occurred. The amount of sugar varied from a trace of 4.2 per cent., the glycosuria being transient and seemingly independent of the size of the dose of extract. In two animals hyperglycemia was demonstrated, the blood showing 0.41 per cent. sugar in one instance. In dogs the results were inconstant. Brain extract produced no glycosuria when injected subcutaneously. In reviewing 176 cases of acromegaly in the literature, Borchardt finds diabetes in 35.5 per cent. of the cases. The pancreas was normal histologically in most of the cases examined. Borchardt thinks his experiments make it probable, although by no means certain, that the diabetes of acromegaly is to be explained by hypersecretion of the hypophysis cerebri.

Capelle has interested himself in the question of sudden death as a result of operation in cases of Basedow's disease. Some have ascribed death to the narcosis, others to a certain flooding of the blood with the products of the thyroid gland. But the use of cocaine anesthesia has been followed by death, and, indeed, the simple tying of the arteries has resulted fatally. A study of the literature shows that enlargement of the thymus is found in fatal cases with great frequency. Capelle finds that of 60 cases (autopsy) 79 per cent. showed a hypertrophic thymus. The operative and postoperative fatal cases had in every instance an enlarged thymus. The investigation suggests: (1) That the thymus is not necessarily enlarged in Basedow's disease. (2) That its enlargement is clinically a good indicator of the severity of the case. (3) That the deaths from heart failure after operations are, in reality, thymus deaths. Cases which show a persistent enlarged thymus should not be subjected to operation.

Schirokauer has produced nephritis in rabbits by administering uranium nitrate and potassium chromate. Severe kidney lesions were obtained, often accompanied by anasarca. Quantitative analysis of the phosphates, chlorides, and sulphates give the following results: In nephritis with generalized oedema, one finds an increased water content of the organs (muscle, liver) as a manifestation of the general total salts of the organs which is ascribed essentially to the retention of chlorides. The phosphates are not increased in the muscles, but in the liver the quantity is variable, being above normal occasionally. The sulphates of the muscles are within the normal limits. In the blood, however, the findings are different, the total ash showing a definite, though slight, diminution. The phosphates of the blood remain normal, while the sulphates in animals poisoned with uranium are abnormally high.

Zuelzer, Dohrn, and Marxer were led to the study of intestinal peristalsis by the work of Starling on the mammary gland and that of Bayliss and Starling on secretion. They suspected that a hormone existed in the stomach which acted as a specific stimulus to intestinal peristalsis, and they succeeded in demonstrating such a body in the gastric mucosa, to which they gave the name "peristaltic hormone." To obtain it the animal must be taken at the height of digestion. It is not obtained from the fasting stomach. This hormone, like others, acts through the blood. If one injects it intravenously in the rabbit, an energetic contraction extend-

ing from the duodenum to the rectum begins in a few seconds. To prepare the hormone, they extracted the gastric mucosa with salt solution or dilute hydrochloric acid and precipitated the albumin with alcohol. The stomachs of various animals, the rabbit, pig, horse and cattle, contained the hormone. In cattle it is only found in the glandular part of the stomach. A similar hormone, weaker and not constantly present, may be obtained from the duodenal mucosa. In a subsequent communication the authors will consider the therapeutic uses of this body.

Ralph Pemberton and J. E. Sweet have found that the suprarenal glands and the nervous portion of the pituitary body in dogs contain something which, on extraction with salt solution and intravenous injection into dogs, cuts short the flow of pancreatic juice after the administration of secretin. It also prevents the stimulation of the gland by secretin, if such an injection has preceded. This feature has been found up to the present time in no other tissues. It is independent of the general rise in blood pressure seen after the intravenous injection of adrenalin and pituitary extracts. The inhibitory factor of extracts of the suprarenal gland seems to disappear by decomposition, oxidation, or other processes before the blood pressure raising element has gone. It would appear that the suprarenal and pituitary bodies have at least one property other than those generally recognized as present.

Casper and Engel give an account of eleven cases of chronic nephritis treated with serum which they obtained in the following manner: 50 to 60 c.c. of blood was withdrawn by venesection from a given case of nephritis. This blood furnished 25 to 30 c.c. of serum which, after warming to 58° C., was injected in healthy dogs. The dogs were injected once or twice a week in gradually increasing doses until eight or ten injections had been given. The dogs were then bled and the serum obtained. This serum was injected in small doses in cases of nephritis until, after repeated injections, no constitutional reaction occurred. Then normal human serum and even at times normal animal serum was injected for the purpose of supplying the complement. Their findings were as follows: (1) The treatment is harmless. (2) In some cases the amount of albumin and the number of casts in the urine remained the same; in others, they diminished and even entirely disappeared. (3) In all the cases, the general condition was benefited. (4) The oedema disappeared. They believe that the serum has no effect on the kidney tissue already diseased, but that it may prevent the extension of the process. They explain in this way the apparent absence of effect upon the amount of the albumin and number of the casts in some of the cases in which the other symptoms improved.

MADELUNG'S DISEASE.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

1. A NEW CASE OF MADELUNG'S DISEASE.—Marsan (*Arch. gen. d. chir.*, 1908, ii., 492).
2. CONGENITAL DISLOCATION OF THE WRISTS.—Robinson and Jacoulet (*Arch. gen. d. chir.*, 1909, i., 1-110).
3. MADELUNG'S DEFORMITY.—MacLennan (*British Med. Journ.*, September 18, 1909).
4. MADELUNG'S DISEASE.—Poncet & Leriche (*Gaz. d. Hop.*, February 9, 1909).

The peculiar deformity of the wrist which has come to be known as Madelung's disease or deformity was described by Madelung in 1878 as a "spontaneous subluxation," in which the lower extremity of the ulna is displaced toward the back of the hand, the lower end of the radius is bent forward and the two bones of the forearm are abnormally separated. This leads to a noticeable deformity and to a certain weakness and disability of the wrists. Following his description Duplay, in 1891, called attention to the fact that in certain cases of rickets there was an incurvation of the radius, and in 1897 Deblet attempted to show that rickets might be the cause of the deformity. Gasne (*Revue d. Orthopedic*, 1906), has written a complete review of the subject which will be found of value.

Marsan (1) says that Madelung has been found in error, that in these cases there is no luxation, but a diaphyseal or epiphyseal incurvation of the radius. The disease is therefore a curved radius with the radiocarpal connection normal. In his paper there is a report of a case in which the radial curve existed on both sides, but was more marked on the left. This deformity was of a year's duration, and during the same period tuberculosis had developed in the tibiotarsal joint. The patient has tuberculous arthritis, and a skiagram shows that the lesion in his wrist developed at the upper diaphyso-epiphyseal junction.

Robinson and Jacoulet (2) present an illustrated historical study of the subject and shows that there is a certain analogy between congenital dislocation of the wrist and congenital dislocation of the hip joint. In both cases the cavity for the reception of the head of the bone is too shallow. In the case of hip joint the deformity is not noticed until the child begins to walk. At this time the traction from walking aggravates the deformity. This is also true at the wrist, the joint being defective predisposes to a posterior dislocation. Trauma, however slight, or occupations of certain types, may cause the subluxation to take place. They compare the curve to the curve seen in genu valgum. Surgery does not promise much for the condition; the best that can be done is an orthopedic appliance to prevent further subluxation.

According to MacLennan (3) Madelung's subluxation is not a true

subluxation, but is a distortion of the wrist, depending upon irregularity in growth at the lower radial epiphysis. This bone may be either curved outward and backward or forward and inward, giving rise to either forward or backward displacements. The condition is seen most frequently in females (85 per cent.) and it affects both wrists in about 70 per cent. of the cases. He mentions among etiological factors trauma, rickets and central nervous diseases, and mentions that the condition may be produced in intrauterine life. Secondary changes occur about the wrist. As treatment he recommends cuneiform osteotomy at the time when the deformity is completely developed, suggesting a destruction of the ulnar metaphysis. In slighter cases simple osteotomy will accomplish a correction.

Poncet and Leriche (4) have gone over the subject again and are of the opinion that the condition may result from various etiological factors, such as rickets, tuberculous arthritis and congenital conditions. They report three cases where tuberculosis of the skeleton elsewhere was found as an accompaniment of the wrist deformity.

DIAGNOSTIC AND THERAPEUTIC NOTES.

PRIMARY TUBERCULOUS SPLENOMEGALY.—Ciaccio (*Deutsch. Zeitschr. f. Chir.*, Vol. 98, Nos. 4 and 5). It is an extremely common error to mistake an obscure tuberculosis for malaria. Ordinarily, however, this error will not occur where there is an intermittent fever with large spleen. Ciaccio reports a case showing that even here the pathologic condition may be due to tuberculosis. The patient was a woman, aged 45 years, with what clinically appeared to be malaria and a huge spleen that was thought to be ague-cake. An exploratory laparotomy was done, but a splenectomy was impossible on account of the firm adhesions. A piece of the spleen, as well as some omental tissue, were excised and on microscopic examination were found to be tuberculous. This observation deserves especial attention in our country where large malarial spleens are so common.

FIBROLYSIN.—Rothschild (*Muench. med. Wochenschr.*, 1909, No. 33). Clifford (*Lancet*, August 14, 1909). Moerlin (*Muench. med. Wochenschr.*, 1909, No. 27). Rothschild considers fibrolysin a sovereign remedy for adherent pleura and in general for contracting scars. A daily injection of 2 c.c., combined with proper exercise, is almost always successful and usually renders surgical interference unnecessary. Clifford, on the other hand, points out the dangers sometimes involved in the use of this drug. In one case the administration of fibrolysin was followed by hemorrhage into the skin and mucous membranes, producing the picture of a true purpura hemorrhagica. Moerlin reports a case of interstitial hepatitis in which the suffering was greatly relieved by subcutaneous injections of fibrolysin.

CHRONIC HYPERTROPHIC RHINITIS.—R. Meyer (*Therap. Monatsh.*, 1909, No. 6). In obstinate cases of chronic hypertrophic rhinitis, Meyer found the following treatment often successful. The nose is washed out every morning with warm physiologic salt solution, to which one per cent. glycerine had been added. Every evening the nasal mucosa was massaged with ten per cent. protargol lanolin or with the following ointment:

Protargol.	1.5
Solv. in Aq. dest.	2.5
Lanolin.	6.0
Menthol.	0.1
Saccharin.	0.3
Vaselin, flav. ad.	15.0

WARTS.—Sicard and Larne (*Presse méd.*, 1909, No. 1). If a few drops of tinct. thujae are injected, by means of a fine needle, into a wart, the latter soon takes on a dark brown color, shrinks and is thrown off. Such an injection should be given after the tumor has been soaked for some time in warm water and has been made as sterile as possible. Papillomata of moderate size are said to yield to a single injection; in very large ones the treatment must be repeated several times at intervals of 5-6 days.

CHOLELITHIASIS AND DIABETES MELLITUS.—Hedinger (*Ther. Monatsh.*, July, 1909). Hedinger reports a case of cholelithiasis in the course of which a diabetes mellitus made its appearance. It was of moderate severity and persisted even in the intervals between the attacks. Finally an empyema of the gall-bladder set in. The pus was evacuated by means of a laparotomy, resulting not only in a cure of the gall-bladder trouble, but also in a permanent disappearance of the diabetes. The latter was, therefore, purely symptomatic and the writer justly concludes that a complicating diabetes forms no contra-indication to operation in such cases.

ETIOLOGY AND THERAPEUTICS OF PERNICIOUS ANEMIA.—Reicher (*Berlin klin. Wochenschr.*, 1909, Nos. 41, 42). Reicher strongly recommends that cholesterin in solution be administered in all cases of pernicious anemia. As the result of extensive animal experiment he has found that cholesterin neutralizes the hemolysins circulating in the blood. As pernicious anemia is probably always due to the destruction of the blood cells by hemolysins absorbed from the digestive tract, a substance capable of destroying them in the circulation should have a curative effect in these cases. The clinical evidence of the value of cholesterin in pernicious anemia is as yet scanty, but in view of its innocuousness and considering the hopeless nature of many of these cases, the treatment is well worth a trial.

CORRESPONDENCE.

PARIS LETTER.

By AUGUSTE A. HOUSQUAINS, M. D.

THE BEARERS OF BACILLI.

In spite of the progress accomplished in the prophylaxis of infectious diseases; in spite of the money spent by municipalities to effect disinfection of localities in which have sojourned the sick affected with contagious diseases; the number of cases reported daily remain relatively the same. Therefore the pertinent questions to ask resolve themselves into these: Are the measures in use to-day efficacious? and—to follow the contention advanced by some—is it absolutely necessary to disinfect localities in the hope of ameliorating conditions? The most recent works on this subject, without infirming the value of disinfection, advance the idea that disinfection as carried on to-day does not suffice, because the pathogenic microbes are not only distributed on the surface of walls, in the thickness of carpets and hangings, and in the crevices of the floor, but have their best vehicle for distribution in the sick themselves. In cerebrospinal meningitis, in cholera, and especially in typhoid fever, it has been demonstrated that even after recovery the sick harbor within themselves—in their digestive tract, in their excreta, in their divers mucous discharges—microorganisms in a virulent state for a more or less prolonged period. Again—and here the question of disinfection becomes particularly delicate and complicated—we know at the present time only too well, that those who have come in contact with patients affected with contagious diseases are themselves an excellent medium for spreading disease, since they take it for granted that having escaped infection, there is no possibility of their carrying any active germs. Hence, it is not difficult to conceive that it does not suffice to quarantine the infected and afterwards disinfect their homes. What is really necessary is to stop the healthy from carrying and disseminating the germs with which they are impregnated on account of having come in contact with infected individuals. Is it possible to isolate these carriers of bacilli, and impose on them a sort of quarantine, since they present no symptoms of disease, and only a microscopic examination of the mucous discharges and the excreta is capable of deciding the presence of virulent microorganisms? Such a procedure is not within the bounds of reason; therefore, it is well for us to admit that, theoretically and practically, the absolute prophylaxis of contagious diseases is impossible.

Ought we, therefore, to conclude that disinfection is useless? M. Comby, physician to the Paris Children's Hospital, has not hesitated to start a campaign against disinfection, as we understand it to-day. In his published statistics, he has asserted that disinfection is not by any means an obstacle to the propagation of measles, since it is the sick them-

selves and their entourage who are really responsible for the active dissemination of this disease. Applying the same line of thought to scarlatina, M. Comby shows that what is true in the case of measles is no less true in scarlatina. It has been accepted without reservation, that the pathogenic agent of scarlatina is found in the superficial layers of the skin. When desquamation obtains, the strips of epidermis detach themselves, thereby liberating the microbes imprisoned in the strips, and disseminating and depositing them in the surrounding atmosphere and on nearby objects. Hence, the disinfection of the room in which the infected patient sojourned has the object of preventing in a certain degree the propagation of the disease, but certain facts currently observed show that the contagiousness of desquamation in scarlatina is less active and less fatal than is supposed. Many are the cases where young persons are so immune as regards all scarlatinal infection, that they have run no risks in playing with children convalescing from scarlatina, even though desquamation was at its height. Apropos of this, Dr. Breesé has reported the following case: A boy nine years old contracted scarlatina. As soon as the diagnosis was made he was isolated in his room, which was entered only by his mother when she returned a blouse which she hung up at the door. Each time she left the room, she washed her hands. The boy during convalescence amused himself by detaching the squamæ, the scales which formed in the palms of his hands. One morning, during the absence of his parents, he called his two sisters and at the half open door handed them what he thought was a most interesting object—a piece of skin he had just removed from his hands. Delighted with the gift the two young girls carried it into their room, where it remained for two days until discovered by their mother. But the sisters did not contract scarlatina, though they had played with their brother's "skin" throughout one whole morning.

Are then the squamæ of scarlatina not the true vehicle for pathogenic bacilli? Facts and experiences incline us to think that the epidermic scales are really not the seat of the pathogenic microbes, but that their habitat is in the bucco-pharyngeal cavity; and that it is the acts of coughing and expectorating through which the infected spread around them the germs of scarlatina. If this be true, would it not be advisable to destroy the germs by disinfecting localities either by the use of formol or corrosive sublimate? M. Comby marshalls against this question the following arguments: In the first place the disinfection, such as it is practical to make, is but slightly efficacious, and its direct action on the microbe is problematic, its most evident action being to ruin the furniture and hangings. Moreover, as regards the eruptive fevers, the pathogenic microbes are but slightly resistant and live only for a relatively short time after quitting the body; on the other hand, remaining in a virulent state for a long time when they are present in the mucous discharges. Finally, the practice of disinfection presents this danger, that while a certain security against the spread of an infectious disease is effected the real sources of propagation and contamination are neglected. Therefore it is a dangerous error to believe too exclusively in the efficacy of disinfecting localities. In New York, for example, where disinfection immediately follows the announcement of contagious diseases and where disinfection was scrupulously observed, the death rate showed no greater decrease in scarlatina than in other eruptive maladies. The same obtains in London, where the thoroughness of disinfection is always assured, and where statistics are regularly made. A case published by Richardson is weighty enough to make us doubt the efficacy of disinfec-

tion. A family composed of a father, mother and four children, lived in a cottage in the country. One of the children contracted scarlatina and died. The other children were immediately sent to a neighboring village some miles away. Some weeks after, one of the children returned to the cottage. At the end of twenty-four hours, it contracted the disease and succumbed. The cottage was entirely cleaned, the pictures were replaced, the floors scrubbed, the linen and clothes disinfected or destroyed. In about four months, the third child was sent back to the cottage, contracted scarlatina and died. According to M. Comby, whose opinions are, in fact, most trustworthy, the children in this case were infected by their parents or by the servants, who very probably were the carriers of bacilli and the disseminators of pathogenic germs, despite the fact that they remained immune from the disease. It is evident that if the disinfection of the cottage had not been made, we would be prone to see in this neglect the real cause of the successive deaths.

Is it necessary then to suppress the practice of disinfecting localities? No doubt in the eyes of a great many physicians such a procedure would be thought a very regrettable step, even though so sane an authority as M. Comby asserts that the microbes of scarlatina, as well as those of other infectious maladies, are not to be found on the walls, or the floors or the ceilings, not in the cellar or the garret. Nevertheless it is of importance to realize that the disinfection of the sick-room is an inefficient measure.

Since it is known that the microbes are harbored in the secretions of the infected person and of those who come in contact with him, it is necessary to disinfect the objects soiled by the secretions; and the better to effect this, disinfection should most carefully be applied to the nasopharyngeal, buccal and auricular cavities, by ordering rigorous and prolonged isolation during which the principles of asepsis ought to be applied to the clothes, hands and face. Such are the conclusions which M. Comby arrives at from his observations and experiences in the treatment of eruptive fevers.

October 10.

OBITER DICTA FROM FOREIGN JOURNALS.

THE POE CENTENARY.

The celebration of the hundredth anniversary of Poe's birth has been marked by the appearance of a number of notable books, such as "The Life of Edgar Allan Poe, Personal and Literary," by George E. Woodberry, "The Poe Cult, and Other Papers," by Eugene L. Didier, "The Last Letters of Edgar Allan Poe to Sarah Helen Whitman," edited by James A. Harrison, under the Auspices of the University of Virginia; but though these are illuminating enough from a literary standpoint, they are not so satisfactory to the medical mind as is the chapter on Poe in the recently published French book, "Poésie et Folie," by Drs. Antheaume and Dromard. For out of this chapter there issues the figure of the poet limned by men versed in psychiatry, and though the psychiatric point of view is never lost sight of in their attitude to their subject, the refreshing thing to register on their behalf is that throughout the chapter they do not fail to recognize the fact that Edgar Allan Poe's genius was not to be dismissed in the cursory manner of Moreau de Tours, who said: "Genius, that is to say, the highest expression, the ne plus ultra of intellectual activity, is a neurosis! Why not? We may easily accept this definition." The following excerpt is a free translation of a reproduction of the chapter on Poe, recently printed in *La Revue Médico-Sociale*:

Alcoholic ancestors, a father and mother phthisical and inured to a life of misery, a brother badly balanced, a sister almost idiotic,—such is the family balance-sheet of Edgar Allan Poe. Orphaned early in life, he was adopted by John Allan, a wealthy merchant. His singular precocity developed early as did his disequilibrations of character. Upon leaving his school at Richmond, and whilst preparing for the University of Virginia, he already showed various eccentricities, and his crises of dipsomania were bad enough to attract the attention of those in his immediate surroundings. A comrade, commenting on his failings, said: "His passion for strong drink was as marked and strange as for cards. It was not the taste of any one drink that attracted him. Without either moistening his lips or wetting his tongue preparatory to enjoying his drink, he would swallow the contents of a glass in one gulp." At the rather immature age of seventeen, then, we already are made aware that the picture presents all the characteristics of the dipsomaniac. In fact, his habit was to drink "en barbare" to use Baudelaire's expression, and throughout his whole career he never deviated from this deplorable habit. After unsuccessful attempts in literature, Poe expressed a desire to be sent to the Military Academy at West Point. But his incorrigible character was too insubordinate to submit to constraint and regulations; therefore, at the end of some months, his name was erased from the list of cadets. His adoptive father having refused to honor his debts, they parted company and he sought anew recognition as a writer.

In Baltimore, whither he went to make his home with his aunt, Mrs. Clemm, and her daughter, Virginia, his endeavors to find work, either

as an editor or teacher, were so unsuccessful that one cannot but feel that misfortune had singled him out for some very unkind blows. Following his ill luck, he abandoned himself, by turns, to frenetic literary work or to the gratification of the great temptation from without, which was forever clamoring for assuagement. All the witnesses of what Poe did at this time agree that his accesses of drunkenness were not frequent, that he was not the victim of habitual intemperance. This distinction should not be overlooked. In fact it is probable that at the critical age of twenty, while under the debilitating influences of physical privations and moral vexations, the dipsomania, until then latent, declared itself in no mistakable fashion by sudden and excessive accesses characterized by an intensity that not only alarmed the victim but also his friends.

But strange to relate, in the midst of this depression, success came unexpectedly. *The Saturday Visitor*, a Baltimore publication, offered one hundred dollars for the best story and Poe won the prize. This success induced him to accept the rather onerous position of editor and manager of the *Southern Literary Messenger*, a journal founded by one White who, while an excellent business man, was in sore need of a literary assistant to steer his paper clear of the shoals upon which so many publications are wrecked. Before long it became known that "the outlawed eccentric," "the incorrigible drunkard", was the luminary to whom the brilliancy of the publication was due. At last some meed of kind fortune was to be Poe's part, for his salary of twenty dollars a week really meant great prosperity. But one day White, in spite of the services rendered him, thought it his duty to dismiss him, little thinking that by this act he would be instrumental in bringing about a state of affairs greatly to be deplored. From now on Poe's extreme sensitiveness to alcohol revealed the striking fact that a debility of the nervous system was present. According to eye-witnesses, he was mentally transformed and even delirious under the least inebriate excitation. "I was walking one day with Poe," says the Rev. Warren Cudsworth, "when feeling thirsty I pressed him to take a glass of wine with me. He refused, but by way of compromise finally accepted a glass of beer. Almost directly a great change took place in him. Instead of continuing his eloquent conversation, he became as one paralyzed: the lips tight-closed, the eyes fixed and haggard. In this condition he walked on without uttering a word. After reaching the house where we intended to pay a visit, he remained for some time a prey to this mysterious influence. One would have thought him a being completely transformed by some bizarre attack of alienation." Willis, who was Poe's collaborator at one time, confirmed this opinion when he said: "Poe's lamentable condition, due to his irregularities, is so thoroughly characteristic that it may be summed up in these words: one glass of wine changes his nature completely; a demon gets the upper hand, and although none of the usual symptoms of drunkenness is apparent, his volition is undoubtedly alienated. In this sort of intoxication which denaturalizes his ideas of justice and of truth, he says and does many things contradictory to the best in his nature."

Of all the immediate consequences of intemperance, the most important to note in Poe was undoubtedly the sentiment of fear. This, moreover, need not astonish us, for one of the most ordinary results of poisoning by alcohol is this panaphobic state which holds the whole being in suspense and makes it a prey to perpetual anxiety. Fear, or in its attenuated form, exaggerated apprehension of people and things, is the most characteristic symptom of this sort of poisoning as it affects the mind. One may go

further and assert that this abnormal moral condition is in reality the cause of all the morbid manifestations, delirious as well as hallucinatory. Every night, with few exceptions, the impression of terror which invaded the poet's mind was so invincible that Mrs. Clemm had to remain at his bedside to reassure him, by kindly talk during many weary hours, that his fear of the shadows which he believed to be peopled with bad spirits was wholly groundless. After his wife's death, the irregularities of his life caused considerable mental confusion and his physical health went to pieces. John Sartain has related an episode in regard to this epoch of his life, which describes in no dubious terms his delirium, and must make sure to every medical mind the real character of its origin. "On a Monday afternoon," says Sartain, "he appeared before me with his face pale and haggard. Sartain," said he, "I come to you to ask you for refuge and protection. It will be hard for you to understand how such a thing that has happened to me can occur in the nineteenth century." He told me that during his trip to New York he had overheard a conversation carried on by some people seated some distance from him, from which he gathered that they were plotting to kill him and throw him from the car. After a long silence he turned to me and said: 'If I have my moustaches removed it will not be so easy to recognize me. Shall I take a razor and shave them off?' I replied that not being in the habit of shaving myself I had no razor, but that if he wished it I would cut them off with a pair of scissors, which operation was soon effected. Before leaving he spoke of visions which had assailed him: of a radiantly beautiful young woman who had addressed him from the top of a battlemented tower. After this sort of occurrence he recovered consciousness slowly, and only after time did he recognize the fact that his nightmare was an illusion."

There is no doubt that here we are in the presence of a crisis in hallucinatory delirium. It is not the only crisis reported in Poe's case, but is so well outlined, so clearly marked, that it must warn us, on account of its gravity, of the dénouement which cannot be far off.

BOOK REVIEWS.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Vol. XI., No. 2, June, 1909, Octavo, 317 pages, with 52 illustrations. Per annum, in four paper-bound volumes, containing 1,200 pages, \$6.00, net; in cloth, \$9.00, net. Lea & Febiger, Publishers, Philadelphia and New York.

The June issue of *Progressive Medicine* contains a synopsis of the literature on the following subjects: Hernia by William B. Coley; Surgery of the Abdomen by Edward Milton Foote; Gynecology by John G. Clark; Diseases of the Blood by Alfred Stengel, and Ophthalmology by Edward Jackson. This number in particular deals with some subjects of special interest, among them being Hirschsprung's disease, the surgery of the pancreas, diseases of the ductless glands and the ever important problem of uterine cancer.

FOURTH ANNUAL REPORT OF THE HENRY PHIPPS INSTITUTE. For the Study, Treatment and Prevention of Tuberculosis. February 1, 1906, to February 1, 1907. Edited by Joseph Walsh, A. M., M. D. Published by the Henry Phipps Institute, Philadelphia.

This report of some four hundred and thirty pages, contains essays by various members of the staff, dealing with interesting questions and problems on tuberculosis in all its phases. Each chapter is by a specialist, which gives added value to the reports. For instance, there is a report on laryngology, tuberculosis of the bones, neurology, pathology, bacteriology, etc. In the form of a report, the essays are presented in a most interesting style, and are illustrated where necessary.

CLINICAL DIAGNOSIS AND TREATMENT OF DISORDERS OF THE BLADDER, WITH TECHNIQUE OF CYSTOSCOPY. By Follen Cabot, M. D., Professor of Genito-Urinary Diseases, Post Graduate Medical School, New York, etc. Illustrated. New York: E. B. Treat & Co. 1909. Price, \$2.00, prepaid.

This little volume is largely a record of the author's extensive personal experience with disorders of the urinary bladder. It is this fact which makes the book valuable, especially to the practitioner. All the various methods of diagnosis, including cystoscopy, and all the forms of treatment which have proved successful in personal experience, are described, but no attempt is made to cover the whole subject of urology.

TEXT-BOOK OF GYNECOLOGICAL DIAGNOSIS. By Dr. George Winter, Professor of Gynecology, Koenigsberg, Germany, with the Collaboration of Dr. Carl Ruge of Berlin. Edited by John G. Clark, M. D., Professor of Gynecology, University of Pennsylvania. After the Third German Edition. Philadelphia and London: J. B. Lippincott Company. 1909.

Winter's "Gynäkologische Diagnostik" made its first appearance in 1896 and ever since has remained the favorite of the German student. Pressed by other literary work, Winter has been prevented from preparing this third edition at an earlier date. Ten years had elapsed since the appearance of the second edition and a thorough and extensive revision of the entire text matter had become imperative. In collaboration with Ruge, the expert in microscopic diagnosis, Winter has brought this standard text-book in harmony with most advanced knowledge. The English speaking profession is under obligation to Clark for the preparation of this excellent translation. He attempted to adopt the work to the special needs of the American practitioner by numerous annotations, which, however, are given in brackets, so that the translated German text remains intact.

INBORN ERRORS OF METABOLISM. The Croonian Lectures Delivered by The Royal College of Physicians of London, in June, 1908. By Archibald E. Garrod. London: Henry Frowde, Oxford University Press. 1909.

Under this title the author, whose work on metabolism needs no comment, has presented a series of lectures on Albinism, Alkaptonuria, Cystinuria, and Pentosuria. These essays contain what is definitely known concerning the subject in hand, and are presented in a concise, readable form. Both the author's literary style and profound knowledge make these essays valuable and interesting to those interested in metabolism.

EXPERIMENTAL PHARMACOLOGY. A Laboratory Guide for the Study of the Physiological Action of Drugs. By Charles Wilson Green, M. D., Professor of Physiology and Pharmacology, University of Missouri. Philadelphia: P. Blakiston's Son & Co. 1909.

A thorough working knowledge of pharmacology may be had only through laboratory experiments. The student must observe for himself the actions of drugs upon the tissues and organs of the animal organisms. The author in this small volume has presented a work for students which he has formulated as a result of the course presented by him in the University of Missouri. The more important drugs are presented with a series of experiments on each. The volume is liberally illustrated with tracings showing the effects of the various drugs upon the heart, lungs, etc.

DISEASES OF THE HEART. By Prof. T. H. von Jürgensen, of Tuebingen; Prof. L. von Schroetter, of Vienna; Prof. L. Krehl, of Greifswald. Edited with additions by George Dock, M. D. Authorized translation from the German under the editorial supervision of Alfred Stengel, M. D. Philadelphia and London: W. B. Saunders & Co. 1908.

This volume, which is one of the Nothnagel's series, is up to the usual standard of that magnificent work. Anything that may appear from the pen of these three masters is well worth careful perusal and study. Von Jürgensen has written the chapters on the Insufficiency of the Heart, Endocarditis and Valvular Disease. These chapters are very comprehensive and deal in detail with the subjects under discussion.

Krehl, who is known for his profound knowledge of human physiology, has dealt in a most masterful way with diseases of the Myocardium and Nervous Diseases of the Heart. This section is dealt with as only one can deal with it who has a knowledge not only of the clinical aspects of diseases of the heart, but of the underlying physiological principles and the pathological anatomy. Krehl's style is always interesting, and is no less so than usual in this production.

Diseases of the Pericardium have been described by Von Schroetter. This chapter, too, is well worth careful study. The volume as a whole is unquestionably one of the most complete that we have, dealing with diseases of the heart.

MEDICAL GYNECOLOGY. By Samuel Willis Bandler, M. D., Adjunct Professor of Diseases of Women, New Post-Graduate Medical School and Hospital, etc., etc. Second Revised Edition. Philadelphia and London: W. B. Saunders Company. 1909. Price, \$5.00.

Only a short time ago we had opportunity to review in these pages this important addition to gynecological literature. The rapid exhaustion of the first edition must have been a source of gratification to the author, but also has offered him a welcome opportunity to make some few changes, especially in the chapters dealing with electricity and hydrotherapy. Several pages on head zones have been added as a further aid in diagnosis.

HUMAN PHYSIOLOGY. An Elementary Text-book of Anatomy, Physiology and Hygiene. By John W. Ritchie, Professor of Biology, College of William and Mary, Virginia. World Book Co., Yonkers-on-the-Hudson, New York. 1909.

The author of this really excellent little manual states in his preface that "the chief object of teaching physiology in the public schools is to train the pupils to keep their bodies in health. The mere teaching of anatomy and physiology will not accomplish this, for the pupil cannot master the structure and workings of the body in a way that will enable him to frame the laws of health and apply them. Neither can the desired end be reached by teaching rules

of health without an anatomical and physiological basis: for without such a basis, hygiene is an intangible and elusive subject. The author has concluded that a conservative middle course is wiser than either of the extremes mentioned above. An elementary text in physiology should be a *balance* text, containing sufficient anatomy to make clear the broader outlines of the structure of the human body, enough physiology to make plain the great laws according to which the body lives, and a full discussion of how a violation of these laws may be avoided.'

In the opinion of the reviewer the author has admirably accomplished the purposes set forth above. The book will undoubtedly meet with a ready acceptance from high and other secondary schools.

DISEASES OF THE HEART. By James Mackenzie, M. D. London: Henry Frowde, Oxford University Press. 1908.

This volume presents the results of the author's observations on affections of the heart, made during an active practice of over a quarter of a century. It has been his special effort "to ascertain the mechanism by which cardiac symptoms are produced, to find out their relationship to organic changes in the heart, to ascertain their prognostic significance, and finally, to employ them as a guide for treatment." There have been utilized all of the newer and more exact methods of arriving at a diagnosis of heart diseases in general.

Chapters are devoted to the instrumental methods of examination, to the arterial pressure, the venous pulse, etc., etc. The classification has been made with special reference to symptoms, thus giving to the reader a broader knowledge of symptomatology, and the importance of careful observation. For instance, chapters are devoted to Diminished Frequency of the Heart's Action, to Irregular Action of the Heart, to the Extra Systole, etc., etc. The volume is beautifully illustrated, is of a convenient size and splendidly published. All in all it is a most satisfactory treatise on diseases of the heart.

ARTERIO SCLEROSIS. Etiology. Pathology. Diagnosis. Prognosis. Prophylaxis and Treatment. By Louis M. Warfield, A. B., M. D. With an Introduction by W. S. Thayer, M. D. St. Louis: C. V. Mosby Medical Book Co., 1908.

The author has endeavored to present in this small volume the essence of what is known concerning "a disease which is especially an outcome of modern civilization." In other words he has attempted to give to the general practitioner a readable, authoritative essay on the subject.

The first chapters are devoted to Anatomy, Physiology and Pathology, and the succeeding ones to the Symptoms, Diagnosis, Prognosis and Treatment of the disease. From its pages one may get a fair conception of the ravages produced by arterio sclerosis, and its sequelæ.

NOTES ON THE DEVELOPMENT OF A CHILD. Vol. II. The Development of the Senses in the First Three Years of Childhood. By Millicent Washburn Shinn. Berkeley, California, University Press. Price, \$2.50.

While primarily based upon observations made on a single child, these notes contain such extensive references to the observations of others, indeed, consider so thoroughly the entire literature of the subject, that the author in this volume presents the most exhaustive treatise extant on the development of the senses of the child. This development is traced from stage to stage, with reference to the genetic relationship of these stages, and the process by which each unfolds from the preceding.

The importance of studies like these for the physician is obvious in view of the ever-increasing interest of the profession and the general public in the proper care of the underdeveloped or abnormal child.

TEXT-BOOK OF PRACTICAL GYNECOLOGY. By D. Tod Gilliam, M. D., Emeritus Professor of Gynecology, Starling-Ohio Medical College, etc. Third Revised Edition. Illustrated with 350 Engravings, a Colored Frontispiece and 13 Full-page Half-tone Plates. Philadelphia: F. A. Davis Co.

Following so closely on the second edition, there was little necessity of thorough changes in the preparation of this third edition. Nevertheless, many sections have been retouched, others having been almost entirely rewritten. The popularity of the work proves best its value.

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EDITORIAL.

A MEDICAL VIEW OF OUR MANY IMMORALITIES.

The charge that the science of medicine is holding itself aloof from the controversial questions of the day, need no longer be considered in the light of truth; for with an enthusiasm not unworthy of adolescence—that period in one's existence when all sorts of problems seem so easy of solution—the medical mind is displaying a doughtiness hitherto associated only with the martial spirit. It would seem that having been criticized for so long on account of a lackadaisical attitude, its one desire now is to achieve, in the shortest space of time, the distinction of frenetic activity. No critic of our present medical tendencies can think aught but that our interest in things, in the borderland which separates what is strictly medical from what is strictly sociological, is a lively one, and is metamorphosing medical science itself, from a dry-as-dust study, barricaded from the outer world, into an open page to be read with comparative ease. Encouraged by the thought that success has attended all efforts at amelioration of nuisances in the limited field that the borderland represents, and brave in the feeling that publicity—that bugbear of our medical ancestors—has not really deprived the science of medicine of the respect which it has always been desirous of conserving, the medical mind is reaching out for new fields, wherein to plant those ideas which shall fructify for the benefit of the people at large. And that its ambitions are a thing to be reckoned with every magazine attests almost monthly, for the columns, which hitherto were devoted to the exploitation of the inanities of the emasculated hero and the simpering heroine, as conceived by the popular American novelist whose one idea is not to offend, have been usurped, to a great extent, by medical considerations written quite in the medical manner. But the thought, which must assail us upon reviewing what has been said on medicine in the twelvemonth about to close, is that the list of subjects which can be discussed in our literary journals must ere long come to an end; and so suddenly, that the many readers,

who have laved in the bewildering technicalities, and strengthened—or shall we write weakened?—their quota of mentality by means of theories which have cried aloud to be read, will be in sore perplexity. To avert so great a disaster would it not be well for those seasoned writers who have devoted time, patience and considerable talent to the writing of the popular medical article, to ascertain by extensive study, in what respect and how far the science of medicine may be a factor in minimizing all those immoralities which always seem to be the undesirable concomitants of the highest civilization. In other and less complicated words, why should not this special science achieve the distinction of an influence in other walks besides the etiology and treatment of disease?

When we look about and take note of the enormous seriousness of the tyros in the limitless province in which reforms as to our morals spring up with mushroom-like rapidity, we, as exponents of the medical art, are prone at once to interfere; for, being ground in the principles of disease, not only of the body but of the mind, we are loth to be silent. Our desire in the service of candor is the impelling force; but, then, should candor have full sway? should it destroy ideals at once, and bring an agitated movement that is upheld by pillars none too strong but fashioned so cleverly that one cannot help but admire them, down to the drab monotony of every-day reality? The stern rules of medicine would make short shrift of the matter, and though much might be said in praise of truth when it is dressed in the garb that admits only of one interpretation, the cry of the little people—reference is here made to the minds which are mosaics of narrowness, obliquities, and Philistinism, but are the most active when the subject is that of reform—would not be stilled until terms were used, that would but hazily convey to others what was really meant by the scathing and uncompromising medical attitude. Hence, the idea occurring to him who is a mere looker-on of this inconsequential and somewhat farcical play, would partake of the color that all ideas have when they are nurtured by the outcome of the warring factions of truth and prejudice! In sum, his bemuddled brain would see through a glass darkly only the terrors as pictured by the perfervid lay reformer, and the uninviting baldness of truth, unrelieved by any warmth that might be added when the medical man warns in a spirit of philosophic kindness. It would be a gaunt picture with all that is repellant; and in so far as the finer shades would be lost—the blending of those tints that make for enough of the humanities to show us that, though our material is poor, there are possibilities of improvement through the right sort of education—it would be purposeless in driving home the lesson.

The question to be asked here is, What are our immoralities? We pause long enough to ask this because of the difference of opinion on

this vital subject. Perhaps two people may agree as to their number and heinousness; but this advance would be of little help in quelling the jarring notes when some hundred voices are strenuously asserting their own carefully nurtured opinions as to what constitutes this broad subject. Education, or lack of the right sort,—and who will decide which is the right sort?—an early training that partakes only of the harshnesses of life with no idea of its warmth, a disciplinary up-bringing that makes for prejudice of what is outside the narrow domestic circle, crushing reprimands of quite innocent acts that result in cant and hypocrisy, or when the youthful product advances in years, in open revolt, may do much to color an attitude that, in the matter of judging the importance or unimportance of moral derelictions, should have all the broadness of a sanity imbued with clear and just conceptions. In demanding a calm and comprehensive survey, we may be overestimating the mental and moral forces of any one individual; but should not the composite picture of what we easy-going critics are pleased to call “the best elements in a community” present enough of the right material whereon to build the hope, that before long there will be a weeding out of unnecessary and nerve-racking talk about our lesser moral disabilities, and only a clear-cut insistence of what is elemental?

Within the short space of the year about to close, the medical, as well as the lay, world has been more or less burdened by controversial upheavals on the deterioration of our literature, the grossness of the drama, the scandals of our divorce courts, and other edifying subjects. One might ask, of what moment are these contentions to the medical mind? While, directly, their bearing is not so great that we need pause in our work to contemplate the social cataclysm as described by the perfervid critics, indirectly they have this interest that if these defects are only in part as widespread as unwonted enthusiasm makes them out to be, the preservation of our race is seriously compromised. And every physician, who is imbued with the dicta of preventive medicine, knows that even though to-day preventive medicine appears to the lay mind to embrace only the measures which should be instituted to curb disease-manifestations, the subject is much more comprehensive, since it is not indifferent to what cannot but be the basis of health—a cleanly moral and physical record. To achieve this end a knowledge of disease is essential, and since it is not to be expected that the laity should know the full meaning of this movement, it must devolve upon the physician to be the mentor. How he is to go about spreading the knowledge which too long has been hidden, is another story, as Kipling would say, and must be decided by the medical body so as to avoid controversy in its own ranks. But if its teachings shall bear fruit among the people, two important matters should

not be lost sight of—the ineptness of too much seriousness, and the weariness in the minds of the uninitiated from the overlaying of technicalities.

The thought which prompts a number of medical men to ally themselves with members of the laity, when about to launch the various societies which have for their watchword the reform of social and moral matters, in the hope that by so doing the medical aspect of all these questions will be appreciated to their fullest extent, should now be considered a mistaken one; for the “brutal candor” of the medical man’s talk, especially in those societies which are concerned with questions pertaining to the sexual life of man and the diseases invariably tabooed by a foolishly encouraged Puritanism, has invited nothing but the most adverse criticism. That this criticism has emanated from lay members who have stood for an intelligent grasp of the subject is indicative enough of their trend of thought when applied to candor, and must move the medical philosopher to the very natural cogitation, that if those who are supposed to be the elect among the laity are thus guilty of an artificial refinement, what must not be the horror of the dyed-in-the-wool Philistines, whose definition of life has always been the greatest stumbling block to progress. And that this complication, this clog in the wheels which are thought, by their illuminating rotation, to be able to dissipate the shadows which now engulf the sexual question, will continue in the circumstances which now obtain—the misalliance of medical men with enlightened laics—is no crotchet on the part of the writer of these lines, but a fact so often evidenced, that despite the repeated coming together of these constituents to formulate one clear idea, confusion, as to what was really expounded by the medical man, is about the only result. Hence the impossibility of any one outside the scientific barriers of medicine to see and judge the sexual question from the only standpoint that would make for a complete understanding.

If, as we have suggested above, it should ever happen that our medical reformers of morals desire to ventilate their opinions in the magazines which are now only too eager to print popular medical articles, let them remember the experiences of those who have either been members of special societies, or have followed their proceedings; for if they do not, their contributions, if too broad from a conventional standpoint, will be visited with the sort of snubbing that all people bestow on those who ruthlessly rend the supposedly Sacred Veil. On the other hand, if the technicalities swamp the thought that should be read with ease, or the glozing is so thick that only a pretty romance is evolved, the medical hand will lose of strength, and far from accomplishing a good and honest purpose, will be but the member of a weakling who writes for the further confusion of a matter that is built on the simplest lines.

A ROYAL OCULIST.

The democratic idea, uppermost in the breasts of all patriotic Americans, is that we are about the only people on earth who can forget that we are well-born, when necessity demands our forsaking a luxurious life for reasons which compel our making a livelihood. We fulsomely talk of this as if it were peculiar to the very air of the country, and cite case after case in many a conversation that would be "thin" without this iterated self-praise. Now, though it might be contended that the very modern disease, known to psychiatrists as "descent-psychosis," is not as widespread here as abroad, there are enough indications already with us—thanks to our imitative qualities—that the day is not far distant when a large number of our fellowmen will be bitten with it. The medical ranks in this country have up to now been singularly free from the affection, but prophecy is naught even in so democratic a province as the republic of medicine, for are we not part and parcel of the general social life, and are not our foibles open to temptations which might factitiously enhance the worth of our positions, in the eyes of all those strugglers who have but one foot on the medical ladder? Nevertheless, as things now stand in the medical profession, we are not too greatly overburdened with those, who by their addle-pated talk in regard to the merchant prince, or the inevitable Captain or General, "who was our family's most distinguished ancestor"—authors and artists are too low to be mentioned—that we need fear the dissemination of ideas which might upset the small-brained in our ranks, or change the honorable and plodding physician, into an inflated being whose strut proclaims his vacuity. And with the thought of how foolish it would be were we to encourage the acquiring of a "descent-psychosis" in our medical ranks, we turn with relief to the contemplation of one who, though born in the purple, never betrayed, during his long career as a physician, the slightest indication that the matter of birth ever stood between him and his duties toward those among his patients, who came to him as much for his skill as on account of the fact that they knew of his many charities. We are speaking of the recently deceased oculist, Duke Karl Theodor of Bavaria, who, though inconvenienced by all the traditions pertaining to the iron-clad rules of court life, rose above them in true untrammelled democratic fashion, and freed himself so thoroughly from the thongs that bind too closely, that he was not long in merging his royal proclivities and prejudices into the broader life of humanitarian and physician. And, in this instance, let us add, there was no thought of "descent-psychosis."

Bayreuth in Bavaria is not unknown to the traveled and untraveled American, for not only was it the home of Richard Wagner for many

years, but to-day it is the musical Mecca of all those enthusiasts who, while they may not understand the "science" of the Master's operas, are clever enough not to betray their limitations. Now a semblance of genuine interest should not be deprecated too harshly, for it may arouse in the less emotional a deeper interest than is their wont, and thus be the means of increasing the number of admirers; and though this obtains quite often enough to insure a small army of adulators, we are, nevertheless, of the opinion that unless the feeling is genuine—that is, born of a complete understanding of the subject—the gain either for admired or admirer is small. This sort of spectacle is repeated so often that, at times, when we are in a philosophic mood, we despair of our faith in human nature, and feel that what is most abstruse, what is completely divorced from simplicity, is always the object of extravagant praise.

But as regards the other great man of Bayreuth, the late Duke Karl Theodor, the very simplicity of his life would do much to repel those whose minds are steeped in the intellectual entanglements of the gropings of a master-mind. We doubt, therefore, if any of the many tourists who made the long journey from this country to Bayreuth, for the sake of hearing Wagner's operas sung as he intended them to be, ever so much as inquired about the famous oculist and the private hospitals he maintained; or ascertained how important he was to the health and welfare of the town. These were unimportant matters to them, but not so to those who made their homes in Bayreuth; for though the musical genius of Wagner is still considered a force of undeniable worth, the simple citizen who slowed his gait to keep pace with the peasant or huckster, in the hope of knowing him better and studying his various moods and desires, was the real power in the town. For out of his bounty the necessitous were fed, and by reason of his skill the sick were made his everlasting debtors.

CIVIL SERVICE IN STATE CHARITABLE INSTITUTIONS.

The merit system in the selection of employees for all the departments in the Federal Service, is already being recognized as the only natural and successful means of securing applicants who are the most efficient; while, on the other hand, appointment to positions in the service of the General Government of persons whose claim is based only on political, or better expressed, on partisan activity, is no longer admitted as being tenable. So widespread are the advantages accruing from the merit system, that the principle involved is accepted without question, even

among those practical politicians, whose emoluments though circumscribed by its application, yet dare not any longer defend the spoils system openly, despite the fact that they foster it, wherever possible, by obstructing in secret the complete operation of civil service rules.

Although admitted to-day to be a practical working plan as applied to the larger interests of the nation, the merit system, be it said with emphasis, is not gaining ground as readily, in regard to State and municipal appointments, as its staunch advocates would desire.

In a paper read by Dr. M. A. Bliss before the State Conference of Charities and Corrections on November 5, at Farmington, Mo., attention was directed to the number of states and municipalities which have adopted the merit system in the selection of public servants. From Trenton, N. J., to Portland, Ore., from Colorado to Massachusetts, the plan is appealing to the business and moral sense of the people with enough force to encourage a trial of its merits; and what is the best evidence is shown by the records which indicate that nowhere has a return to the old method been seriously advocated, once a well-intentioned trial was made.

There is no function of the State which is more altruistic and demands more careful selection of agents of administration than that of caring for the sick poor. With what care do those who can afford to pay, select physicians, nurses and attendants, so as to direct the treatment, to administer to the comfort and to guard the safety of their sick ones. Whether mentally or bodily sick, these requirements are considered of equal importance. But in the case of the sick poor, though they are the wards of the State, and by reason of this should receive the best attention, such care has not been shown.

At present physicians, assistants, nurses, attendants and other helpers are, in Missouri, selected without the application of any test to established fitness for the duties of the positions they are to fill. Again, after they have, in many instances, gained experience in the special lines of work by divers periods of application, they are swept out to make room for another batch of the inexperienced. Were these changes made in the interest of the sick, the error which is now committed, irrespective of efficiency on the part of an attendant, would be greatly palliated; but they are invariably made because, in the fitful changes of political fortune, the opposite party has gained ascendancy.

Whatever it may lack of reaching perfection, competitive examination is admittedly the best present plan of acquiring the most competent and excluding the most unfit appointees. It closes the door of admission to many whose aspirations are ahead of their abilities. It protects the appointing body from exasperating solicitation and even threatening de-

mand. And best of all considerations, it subjects the employee to the best devisable test of fitness, short of actual trial, in the position sought.

Civil Service rules, honestly and earnestly applied, result in a retention and advancement of the best elements in the corps, and in the elimination of those whose actual performance does not measure up to the standard established by the best. Moreover, the merit system saves to the service of the State, the energy now applied to each election by the holders of appointments, for the preservation of their party in power. Their tenure under the present system depends upon their vote-getting abilities. As for its being a matter of principle, that is a contention that is easily riddled; for without doubt, the activity created among partisan workers is entirely due to the acquiring of dollars and cents,—in short, a livelihood gained under the easiest conditions.

But, on the other hand, much may be said on behalf of the merit system. It is informed with many virtues of which fitness for admission to the service is the first desideratum. Efficiency would be the only pathway to promotion, and tenure of office would be protected so well that removal would be difficult, unless there was a dereliction in the matter of duty. In the management of the State hospitals, the important item of economy under the merit system in connection with a merciful attitude, should not be overlooked. In sum, there would be more and better service for less money, a fact that has been the rule wherever the system has been tried.

And with these lessons before her, why should the State of Missouri be a laggard in the matter of adopting the merit system in her eleemosynary institutions? Are her sensibilities so blunted, is her acumen so defective, that she is purblind to the many successful working examples in other States, which, with but little effort on her part, could be used as a pattern for the making of her own statute, with improvements or modifications to meet her own special needs? The Civic League of St. Louis has already prepared a report, embracing a suggestion to the Board of Freeholders, of the form an ordinance should take which has for its object the establishing of the merit system; and with so excellent a suggestion at her very door, Missouri would invite nothing but dispraise were she to continue to express indifference to the advantages arising from a well-trained and stable personnel in her hospitals, secured by competitive examination or investigation, the classification of employees, and promotion on the basis of the best service.

THE BUREAU OF PUBLIC HEALTH.

In the President's message which has just appeared the salient feature, for physicians throughout the country, is the suggestion for the establishment of a "Bureau of Public Health." What such a bureau would mean in the matter of the study of diseases which affect the health of many thousands of citizens, cannot be overestimated, for by its Federal control it would be far-reaching enough to grasp situations which now are beyond the Government's jurisdiction. The concentration, resulting from a central governmental office presided over by scientific investigators, would undoubtedly be the means of effecting investigation directly a report reaches the bureau, and thus a whip would be placed in the Government's hands to lash the first manifestations of a disease. Again, what could be better for the preservation of the health of the country, than a vigilance that would note all those variations in statistics that now escape Federal notice, on account of the lack of the proper facilities. And since preventive medicine is the order of the day, would not the bureau be a splendid asset in warning and admonishing those communities which, on account of carelessness, are only too often guilty of a laxity that is a menace to the health of their citizens.

The two diseases—hookworm and pellagra—are cases in point, for our present knowledge of them, due to latency, illustrates the importance of not repeating an oversight, until the spread of a disease is so wide that it is difficult to combat. But in case the "Bureau of Public Health" is established this *contretemps*, so indicative of a Bureau's need, will be nigh impossible: for being in touch with all the sections of the country, it will see that directly reports are sent in, its investigators will be put to work to remedy, if not completely stop, all untoward situations.

No country of the intelligence of the United States can afford any longer to be without a "Bureau of Public Health," and though the President's remarks are only a suggestion to Congress, we feel that their weight will not be lost on a body of men who surely must have the health interests of communities at heart, in the same proportion as they have the political interests.

LITERARY NOTES.

By the death of Richard Watson Gilder the ranks of literary men, that have for cause the prosecution of the best literary spirit, as illustrated in weekly or monthly publications, have been considerably weakened. The *Century* would not be the force it is to-day had the reins of its leadership

been held by weaker hands than Gilder's; and inasmuch as he raised, by the best sort of journalism, a rather obscure monthly—obscure by comparison with its foreign competitors—to exalted heights that need fear no adverse criticism, our judgment of everything else that he attempted in the literary line should be tempered by the kindest spirit. In no other magazine that we know of has the reflected personality of an editor been more evidenced; and though we might write that a dominating force is not always for the best of a magazine, in the case of the management of the *Century*, that sort of charge would be without foundation. For Richard Watson Gilder was just and upright; his manliness always went unquestioned; no literary obliquities ever bemuddled his brain; and backed as his judgments always were by a deep and varied knowledge of the literary tendencies of the day, his mistakes, in the conduct of a great magazine, could be naught but infinitesimal. The lesson to be got from the life which has just closed is one that should be remembered by all editors throughout the country; and even though the man at the helm may have but a second-rate bark to guide through the treacherous waters of modern journalism, his thought for good derived from the life of Richard Watson Gilder, so as to abet his less ignoble qualities, will bear as much fruit as might fall to him whose responsibilities are larger.

Dr. de Keating-Hart's "La fulguration et ses résultats dans le traitement du cancer," recently published by A. Maloine of Paris, contains the results, up to the present, following the employment of the method of fulguration by the author himself, and by those who have practiced its technique; and he marshals the statistics pertaining to 247 cases treated by himself against the failures, as published from time to time, by a certain coterie of surgeons. The author divides his own statistics, covering 247 cases, into two categories, the first comprising 83 cases of general cancer, to-wit:—those in which cancer developed in the vital organs. Of these there were 72 per cent. in which the amelioration was decided and unmistakable (suppression of hemorrhage and of pain, cicatrization, improvement in the general health, etc.). In the second category are grouped 118 cases in which the macroscopic lesions were removed before fulguration was instituted, and 13 cases operated upon according to the present principles of surgery. The 118 cases yielded 66 per cent. of cures, the time ranging all the way from six months to three and a half years, while the 13 cases, of which 5 were cancer of the tongue, were without relapse during the limited time of from six months to a year. In connection with these facts the author strengthens his attitude, in the matter of fulguration, by the encouraging statistics of Duret and Desplat; concludes by explaining the failures of other experimenters on account of errors in technique, be they electrical or surgical, and points out in what direction these errors most often lie.

ORIGINAL ARTICLES.

THE CURE OF MOVABLE KIDNEY BY RESTORING THE STANDARD WEIGHT WITH A PURE MILK DIET.*

By LOUIS KOLIPINSKI, M. D., of Washington, D. C.

Sed ego diæta curari incipio, chirurgiæ tædet.—CICERO.

A movable kidney is one that, when the subject stands or lies upon the opposite side, falls forward into the anterior part of the abdomen, into the lumbar, the umbilical or even into the hypogastric region, and recedes when the position is supine or upon the defective side. The term moving kidney would seem more precise than that in common use. A floating kidney is one of congenital origin, has a complete peritoneal envelope, is liable to pathologic change, must be distinguished from the former, and may require other, namely operative, treatment.

A movable kidney is an abnormality of adult life, is rare in men and very common in women, more in those who have borne children, but by no means seldom in nulliparous females, and in the majority of cases is found coexisting an hysterical or neurasthenic or melancholic state.

The prime cause of this displacement is emaciation. Leanness is almost always present. In a manual examination of a thin woman a movable kidney is very frequently discovered, much oftener indeed is it present than it is felt for. Furthermore it is not difficult to palpate the kidneys in a suitable subject and a firm pressure into the costo-iliac space posteriorly may produce primarily the condition of a renal dislocation.

The normal kidney is embedded in an abundant mass of fat and connective tissue which fills completely the dead space around the organ. In wasting of the body this fat disappears rapidly so that in very thin persons none at all remains. For the occurrence of movable kidney then, various conditions are associated or liable to make it appear much more frequently in women than in men. The lesser muscular development of the female and the greater laxity of the articular system. The distension of the abdomen in gestation and the post partum looseness of the abdominal wall. The greater proneness of women to lose weight than men. The less resistance to mild trauma and the greater strain of muscular effort of all kind, result in women in a moderate impulse being sufficient to dislodge a kidney robbed of its essential support. This is why the right

*Read at the Meeting of the Therapeutic Society of Washington, D. C., November 6th, 1909.

side much oftener presents it than the left, the stress of muscular effort in the right handed individual. That tight lacing and unsuitable corset, and high heeled shoes can produce this abnormality may be possible but are of trivial importance since those liable will acquire this condition be these factors present or absent.

A movable kidney is discovered by manual palpation in the following manner: The subject is placed in the side position, the knees slightly flexed, the trunk slightly prone, a firm pillow is placed beneath, if the bed is too yielding to elevate a little the surface to be examined. The costo-iliac space is pressed inward with the hand, when it will be found to be less resisting than normal. Percussion of this area and over the twelfth and eleventh ribs gives a sound more or less tympanitic. More marked in left renal displacement than in right but sufficiently



Fig. 1. Multipara, aet. 63. Right movable kidney below umbilicus.

distinct in the latter to make this a good confirmatory sign of an empty or occupied cavity within. The other hand feels the anterior abdomen and a movable kidney is usually discovered at the outer border of the rectus muscle, at the level of the umbilicus, occasionally a little higher than this or else below the same land mark. If the abdominal wall is thin and lax the dislocated kidney can be grasped with the finger tips or held between the apposed hands. To do this the observer is in front of the subject and in the same position the abnormal organ can, not alone be most distinctly felt in outline, but, also, when supported by the palpating fingers, be seen.

A movable kidney may be existant for years and cause no complaint

or disturbance in health or else the symptoms it produces are so clearly stated by the patient that the observer is directly guided to verify his assumption. The most common subjective symptom is the feeling of its presence produced by the fallen kidney in its adventitious place and with this an abdominal pain over the affected organ on standing, or in walking. It is not tender unless pathologically altered or a firmer pressure is applied. Firm bimanual pressure may cause immediate nausea. Dyspeptic disturbances may occur but are not acutely marked. They are flatulence, epigastric oppression, with cardiac palpitation, attacks of vomiting, sense of uneasiness after eating, or more or less cardialgia.

True migraine may be caused by movable kidney.



Fig. 2. Multipara, aet. 63. Right movable kidney in natural place.

A new group of symptoms arise, of a psychic kind, in many patients on being informed of the name of their infirmity. Many of neuropathic tendency, aggravated by emaciation, cannot bear the burden of the knowledge that they possess a dislocated, a movable, even a floating kidney. This thought is fear and awe inspiring. A gentle intimation that an operation is or very soon will be necessary throws them into a panic of terror or the apathy of indifference. Agents like these result in the development of severe hysteria, neurasthenia or melancholia.

Acute hydronephrosis may occur in movable and in floating kidney, from torsion of the ureter and that similar acute paroxysm with severe pain, vomiting and appearances of shock or collapse called Dietl's crisis and thought to be due to torsion of the renal vein.

The indication in the treatment of movable kidney is to restore the

organ to its proper site and to retain it there by means of its natural support, in fact to replace the wasted fat capsule.

This can be done with most expedition and ease through the use of a pure milk diet, so estimated as to approximate a gain of one and a half to two pounds in weight each week. A pure milk diet pursued with system accomplishes this with great exactness and without any other remedial adjuvants excepting those cases where the nature of her affliction has demoralized the patient and we seek to rid her of her apprehensions in the shortest time and to control her habits so that she may not wander from the exact regimen. A rest in bed, a bed cure of four to six weeks is then the only other aid used in the milk treatment.

In determining the quantity of milk required and the patient's power



Fig. 3. Multipara, aet. 29. Right movable kidney at level of umbilicus.

of consumption, it is necessary to find the standard weight determined by sex, height and age. This is done with the aid of tables such as those compiled by Dr. A. S. Rogers.

The daily measure needed is from eight to sixteen pints. The necessity of these fixed quantities is established by the weekly gain in weight determined by the scales.

It may be proper to state that these views of dietetic milk therapy are based solely on experience in practice. Milk used in large volumes is a harmless food of unequalled power and virtue, so perfect that the economy needs not even drinking water and in its raw state daily ingested in any amount will not be found to be a medium for the transmission of the germs of contagious disease.

The milk should be taken at two hour intervals, beginning early and continuing as late at night as may be necessary to consume the quantity fixed upon.

The effects of the milk diet on the organism of the patient whose weight is to be increased are the following: The blood volume is raised to normal, if deficient, and likewise the composition and quality. It is a direct food and restorer to the heart muscle and increases the normal secretions and excretions. It augments the biliary flow, greatly increases that of the urine and, regulating the evacuant function of the bowel, cures constipation.

It makes one animated and cheerful, increases weight very much when subnormal, strengthens the muscles and tegumentary system. It causes



Fig. 4. Multipara, aet. 29. Right movable kidney in natural place.

profound and refreshing sleep. It rouses appetite to a stage of hunger but abrogates entirely the sense of thirst.

The following notes of some cases of movable kidney cured with a milk diet explain the method in practice and show with what ease and accuracy it is possible to restore the deficient weight to the body by the rapid and normal deposition of fat.

CASE I. Married lady, mother of two children; age 30 years; height 5 feet 4 inches; standard weight 129 pounds.

Had a movable right kidney for five years, discovered soon after the birth of her second child. At that time nephrorraphy was urged by a surgeon, but deferring to the wishes of her family, who feared for her safety in view of her weak and debilitated state, operation was de-

clined. She became an exquisite example of invalidism from this cause. Standing and walking were associated with abdominal pain, dull dragging or acute. The dislodged organ could be plainly felt and seen, at times in different parts of the abdomen, right and left, being a veritable wandering kidney. Her appetite was poor, spirits depressed, more or less taciturn. She had frequent and severe attacks of migraine confining her to bed and at times treated with the hypodermic use of morphine.

In one of her attacks of sick headache whilst away from home, the moving kidney was discovered by her medical attendant and she was deliberately advised that an operation was urgent as the state of the affected gland appeared to show the beginning of a graver lesion. Still more depressed in spirits and alarmed at the danger to herself she submitted to the milk treatment with excellent zeal. It was combined with confinement to bed for more than a month. The kidney when, last seen in its aberrant position at the beginning of the treatment, lay to the right of the navel and elevated the skin in a convex ridge. The initial weight was ninety-two pounds. She began to take five, six and soon seven quarts of milk daily. At the end of five weeks her weight was one hundred and ten pounds. In the eighth week, being up and lightly dressed, the weight had risen to one hundred and twenty-two pounds. At the end of the fifteenth week the patient had attained one hundred and thirty-five pounds and could be considered physically perfect. Interviewed a year later this lady's state had remained as it was at the end of the treatment. She had not had a single abnormal sensation from her former infirmity or a single attack of migraine. Her manner was joyous, grateful and appreciative.

CASE II. Female of sixty-three and mother of several children; height 5 feet 4 inches; standard weight at forty years 135 pounds.

Was extremely emaciated mainly from fasting as she was tormented with distress after eating, gastric pain and so on. The incessant complaints of her morbid feelings had confused her family and a series of medical attendants. Four different times was the right kidney found movable and dislodged and the same number of advisers recommended operation. She possessed several different bandages, none of which she was able to wear without further discomfort and distress. The woman was agitated with melancholia but it was impossible to determine which was the primary abnormality in her health. Whilst suffering abdominal pain all the time this was referred to the left inguinal and left lumbar regions, she declaring the movable kidney gave her no inconvenience. She was given seven and soon eight pints of milk daily. The initial weight was ninety pounds about the end of May, 1909; June 6 the weight was $93\frac{1}{2}$ pounds; June 14, 97 pounds; June 20, $98\frac{1}{2}$ pounds; July 3, 101 pounds; July 21, 103 pounds. Gain had been held back by an attack of summer diarrhoea. August 3, 108 pounds; August 24, 114 pounds. The illustrations show the kidney fairly visible in the first figure and in the second it is in its normal place in the loin and the an-

terior abdomen is shown with an empty concavity where it had formerly been found.

CASE III. Female, single, age 29 years; height 5 feet 2 inches; standard weight 121 pounds.

Had a right movable kidney for years. Was employed as a maid in an establishment for the manufacture and selling of bandages and corsets for her identical affliction. She was much emaciated and her employment and the necessity of ascending staircases were too arduous and painful so that she gave up her work in despair. She had much backache and pain in abdomen, so much in walking that she held, as she said, her stomach with her hands. She had, furthermore, a burning sensation of the skin over the painful region and she could feel the lump when in or out. When in an ordinary corset, was comfortable; when out a sickening pain resulted therefrom. She could reduce the kidney when out of place by lying upon her back, flexing acutely the knees and inspiring deeply. On relinquishing employment she went home an invalid in strength and bodily comfort. She became liable to attacks of fainting, later of hysteria; she grew morose and wanted to die. Domestic poverty aggravated her ill health.

She was given 4 to 5 quarts of milk each day. Here follows the record of the weights:

July 15, 1909....	100	pounds.
July 21, 1909....	101	pounds.
July 26, 1909....	103	pounds.
Aug. 1, 1909....	104½	pounds.
Aug. 11, 1909....	106	pounds.
Aug. 16, 1909....	107	pounds.
Aug. 21, 1909....	110½	pounds.
Aug. 28, 1909....	113½	pounds.
Sept. 4, 1909....	114	pounds.
Sept. 20, 1909....	117	pounds.
Oct. 2, 1909....	118	pounds.
Oct. 9, 1909....	121½	pounds.

The illustrations show the appearances of the abdomen at the beginning and at the end of treatment.

It will be found that this dietetic treatment will cure most cases of movable kidney when emaciation is present. It must hence be applied before any other method of cure or treatment is entertained. The operation of nephrorraphy may be done in the obese, in degenerative floating kidney, and the same with hydronephrosis and when the milk diet has restored the weight but not the kidney to normal.

Of the other non-operative means of treatment, nothing favorable can be said, as they are either crude and inefficient or else with no rational basis or theory. The wearing of belt, corset or truss is totally inappro-

priate and there is no similarity between the subject here considered and an ordinary hernia. From book to book, approval of such appliances is copied whilst it is apparent that the authors are totally wanting in practical experience of any benefit done therewith. Massage is another example of a vague and imaginative treatment. Such means neither ex-nor relieve. Electricity should likewise be damned without praise and finally extirpation of a healthy movable kidney is a barbarism.

To summarize what has been said: The treatment of movable kidney is first dietetic to restore the subnormal weight to normal or above. This is best done with pure milk and requires two or three months for its accomplishment. It removes all subjective and objective symptoms. Second, in floating kidney with altered gland, in movable kidney with normal or plus body weight and in cases of failure of the milk treatment and persistence of distressing symptoms, the operation of nephrorraphy. This operation of suturing the kidney to its normal bed will be seldom, very seldom found needed.

THE OUTLINING OF NORMAL ORGANS AND THE DIAGNOSTICATING OF DISEASED CONDITIONS OF THE PLEURA AND LUNGS BY MEANS OF PALPATION.*

By F. M. POTTENGER, A. M., M. D., L.L. D., of Monrovia, California.

In offering to the profession the two apparently new methods of diagnosis which I shall describe to-day, I wish to state at the outset that I do not expect them to displace old and approved methods, nor do I expect them to enable the practitioner to make a sure and easy diagnosis. I offer them simply as supplementary to the old and long tried methods, but with the candid belief that when thoroughly appreciated they will facilitate diagnosis at least in certain cases.

I realize also that it is best in presenting new signs and methods, to demonstrate them on the living subject; so, I have brought several patients here this afternoon that I may be able to show you clearly what these new signs are; and, allow me to say, these are not picked cases for the demonstration of *muscle rigidity*, but the sign appears in nearly all cases, except those where the inflammation is exceedingly slight, about as clearly as you see it here.

When we consider the millions of chests that have been examined, not only by general practitioners of medicine, but by the masters in the art of diagnosis, we cannot help believing that the signs which I shall present to you to-day must have been appreciated by them; yet, so far, I have been able to find no reference in the literature to "muscle rigidity," as I describe it, neither have I found any one who has seemed to know of its presence. I have heard numerous rumors concerning the ability to outline the heart and liver by means of touch, and I am positive that many men have been using this sense of touch, some without fully appreciating it, in examining these organs; but, so far, I have not been able to find anywhere a definite statement to the effect that we are able to differentiate, by simple touch, organs or parts of organs of different density when situated within the cavities of the body; nor have I found anywhere a statement of the ability to do this by the lightest touch of the skin by what I have chosen to call "light touch palpation."

The two physical signs which I wish to show you to-day are:

I. **MUSCLE RIGIDITY**; which may be described as a feeling of resistance noted on palpating the muscles which overlie inflammatory conditions affecting the pulmonary parenchyma or pleura due to (1), acute muscle spasm when the inflammation is acute; and (2), pathological change in the muscles when the inflammation is chronic.

*Read before the Thirty-fifth Annual Meeting of the Mississippi Valley Medical Association, St. Louis, Mo., October 12-14, 1909.

II. A feeling of different degrees of resistance noted over organs or parts of organs of different density on LIGHT TOUCH PALPATION.

It can be understood from this statement of the two signs that they are clearly distinct. *Muscle rigidity* is confined to the muscles alone, while the difference in resistance found on *light touch palpation* applies to the density of tissues as found not only in the muscles but the deeper organs as well and may be used in outlining either normal organs or areas of disease, where such disease produces change in density of any of the tissues which we are able to palpate. In spite of this great difference, confusion of the two signs has already arisen in the minds of some who have learned of them. The reasons which lead to the confusion are, first, that both signs are found on palpation; and, second, *muscle rigidity*, being due to altered density of the muscle tissue, can be determined by comparing the findings on *light touch palpation* over the altered muscles with that found over normal muscles.

With the full appreciation of these two signs, palpation at once assumes a new significance and takes its place as a very important method of examination.

Muscle rigidity, as mentioned above, is due either to acute spasm or chronic pathological change. The explanation of its cause leads us into the difficult field of physiology of the nervous system, and especially that of the reflexes and the sympathetic system concerning which there is so much information still desired. The most plausible explanation is that the inflammatory process in the lung or pleura, the same as in the causation of the spasm in appendicitis and other diseases of the abdominal viscera, acts as the stimulant which is carried through the sympathetic nervous system to the cord where it stimulates not only its own cell but adjacent cells, thus involving the motor cells in the same segment of the cord; the impulse being reflected along the motor fibres to the muscle, causing it to contract. The irritant being constant, the spasm is tonic in character. But, finally, as a probable result of the constant stimulation of the nerve, the muscle undergoes pathological change. Examined microscopically it shows degeneration; at times, destruction of the muscle bundles with attempt at repair. To the touch the muscle is more resistant, firmer than normal, the same as it is when the seat of acute spasm, but it has a doughy feeling, owing to the fact that it has lost its normal elasticity.

Consequently, whether the causative inflammatory process in the lung or pleura be acute or chronic, the muscles assume an increased feeling of resistance to the touch. While, as yet, I have not examined the muscles microscopically in chronic inflammation of the abdominal organs, yet on theoretical grounds I should expect the same conditions to obtain.

For practical clinical purposes patients showing *muscle rigidity* naturally divide themselves into four groups:

1. Those whose lungs and pleura have not previously been the seat of chronic inflammation, and are now affected by an active process. In

such cases we have the greatest degree of muscular spasm, because the muscles, being normal, are best able to respond to the stimulation. This shows in acute pleurisy, pneumonia, and early active tuberculosis processes. Its presence in these cases is what makes it especially valuable in diagnosis. In early active tuberculous lesions the muscle spasm offers a very reliable indication of the underlying disease. Theoretically, it should be present as soon as the disease occurs in the lung or pleura, but, of course, it is possible that the slightest inflammatory conditions cause so slight a spasm that it might go unrecognized clinically; my experience, however, warrants the assertion that it appears very early and, I am sure, that in some cases where I have found it, it would offer the general practitioner of medicine opportunity of making an early diagnosis before he could probably do so by the usual time-honored methods. It seems to me that it might be very practical in determining the presence of a central pneumonia. While I have not had the opportunity of testing it in these cases, yet, on theoretical grounds, I feel safe in believing that it is present.

2. The second group of cases which shows *muscle rigidity* is the chronic cases with extensive lesions, whose muscles have undergone pathological change, and lost their normal elasticity. These are quite easy to detect by their resistance and doughy feeling on touch.

3. Group three comprises those whose muscles are pathologically changed, owing to a chronic inflammation, and whose chests are at the time of examination again the seat of an active process, thus giving the picture of a spasm of a degenerated muscle.

4. Group four comprises that class of cases who have a small focus which is not, at the time of examination neither has it ever been, the seat of much activity. Here the sign is often extremely hard to find.

In the first three groups the sign is easy of detection and of great value. In fact it can often be determined by simple inspection. In the last its presence is difficult to detect.

This classification at once suggests that this sign is of value in just the cases in which we desire the most help, namely, where we wish to determine whether the disease is active or not. Neither percussion nor auscultation can be relied upon to give positive evidence of the presence of activity, but when we find a spasm of the muscles present I believe we can say with certainty that an active process lies underneath the muscles which are in a state of spasm. In examining a great many cases, so far I have not found a single exception to this rule.

In other papers 1, 2, 3, I have discussed the bearing of *muscle change* upon some of our most prominent physical signs in disease of the chest, and especially those which aid in early diagnosis of tuberculosis. I have shown that it is an important factor in the production of the lessened motion over affected areas, the lessened respiratory note, the prolonged expiration, harshened breathing, and changes on percussion. I have also shown how it is probably the primary factor in the production

of ankylosis of the costosternal articulation as described by Freund^{4, 5} and Hart⁶, Hart und Harrass⁷, and how this early spasm, when confined to one side, can produce twisting and curvature of the spinal column.

With this brief description of muscle rigidity it can readily be seen that its significance reaches far beyond its value as a sign in physical diagnosis. It offers us a rational explanation of other phenomena that have long been observed, some of which have been considered as most reliable physical signs in disease of the chest.

The ability to outline organs by *light touch palpation*⁸ may be considered a refinement in diagnosis by some, but it is a refinement that can be made extremely valuable and practical. It supplements percussion and auscultatory percussion in a very satisfactory manner, and, for those who are not expert at percussion or who have not learned to detect percussion resistance, and whose hearing is not acute, it can be made a most valuable aid.

In outlining the heart I have compared its findings with the orthodiagraph and am pleased to say that it is very accurate. In the tests, I mapped out the heart by *light touch palpation* with a blue pencil, then the orthodiagraph was put on and without seeing my marks the heart was again outlined with a red pencil; and in sixty per cent. of the normal chests both methods coincided, in eighty per cent. the right border was correct and in eighty per cent. the left was correct. In the instances where I failed, the error ranged from $\frac{1}{2}$ to $1\frac{1}{2}$ centimeters.

It is surprising to learn that it is possible to detect the edge of the heart and liver by light touch even when covered by lung.

One caution I must offer, and that is not to palpate deeply. Only the lightest touch, barely touching the skin, is necessary. In fact, deep pressure interferes with the most sensitive touch.

Difficulties arise in outlining the heart by *light touch palpation* when the chest is covered with hair, when the subcutaneous and muscular tissues are too thick, or when they are very thin. Another difficulty arises in outlining the right border when the ribs form an acute projecting angle, as they sometimes do. If either border lies beneath the sternum, as sometimes occurs in displacement of the organ, of course difficulty arises. Knowing these difficulties, and perhaps others that will be observed, they do not need to impair the value of the sign.

It is necessary in using *light touch palpation* to confine the touch to soft tissue when possible, although it is possible to outline the deep organs through the rib and sternum. Thus in outlining the heart, begin wide beyond the border of the organ in the intercostal space, and come gradually toward the heart until the border is reached. The border of the heart will be recognized by a slight feeling of resistance to the palpating finger. In order to appreciate this the field of touch must be confined to the intercostal space, otherwise, when the rib is crossed, the increased density of tissue corresponding to the rib may deceive the examiner and be taken for the heart border.

The liver and spleen can also be outlined in this way and changes in density of the musculature caused by underlying inflammation of the pleura and pulmonary parenchyma—*muscle rigidity*—may be easily detected.

My first opinion was that this resistance was a reflex of the *erectores pili*, but I am now convinced, since it can be detected in the cadaver as well as on the living subject, that if there is a reflex element in it, it is not the most important, but that this sign depends on our ability to note the difference between tissues of different density even when lying within the hollow cavities of the body, by feeling through the body walls by extremely delicate palpation.

That these signs are practical for the general practitioner of medicine I have reason to believe from the fact that I have shown them to many physicians and almost without exception they were able to appreciate them; and many are using them in their practice.

My thanks are due to Professor Ghon and Docent Bartel, of the Pathological Institute in Vienna, who assisted me in working out the pathological changes in the muscles, and to Dr. Schwartz, assistant in Holzkecht's x-ray laboratory of the University of Vienna, for his kind assistance in proving the results of *light touch palpation* in outlining the heart by the orthodiagraph.

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LABOR AS A FACTOR IN PELVIC DISEASE.*

By JAMES E. KING, M. D., of Buffalo, N. Y.

Ajd. Prof. Obstetrics, Univ., Buffalo; Att. Gynecologist, General and Erie County Hospitals; Fellow Royal Society Medicine, London, etc.

Many of the ills which the surgeon is called upon to treat are due either to abortion or to labor at term. Abortion, criminal or natural, is an especially frequent factor in pelvic lesions, but it is not the purpose of this paper to discuss abortion and its results, but only those conditions which are due to labor at term.

Parturition, as a perfectly physiological process, should be followed, theoretically at least, by no abnormal symptoms or condition. As a matter of fact, however, so frequently do we hear from a patient that her troubles began after the birth of her child, that we expect to hear the same from almost every patient who has borne children. The writer has been interested to analyze many of these cases; some of the conditions were found incidental to labor and not the result of it. For example, a gonorrheal infection acquired soon after the puerperium, is frequently ascribed by the patient to the labor. Even, however, eliminating all such cases there remains a goodly number of women who can clearly date their ill health from a confinement.

We might naturally expect that a severe or complicated labor is more apt to result in sequelæ than an easy one. If we are guided entirely by the statements of patients, we would be justified in believing that such is the case. Many of the most troublesome conditions are the result of normal, comparatively easy labors. The writer has had considerable difficulty in gathering data from patients that would give a correct notion of the character of the labors. Sometimes the statements are very misleading, but careful questioning will show that what at first appears as a complicated labor was really a perfectly normal one. With a history of forceps, it is seldom possible to determine with any reasonable degree of certainty whether they were high, low or medium. The same is true of infections and, beyond a history of fever, usually nothing is learned. Cases referred to a surgeon are, however, often accompanied by a history of the labor from the physician who attended the patient; and these cases, together with those seen in consultation at the time of confinement, shed considerable light upon labor as the cause of pelvic conditions. The few observations which the writer wishes to present are based upon cases from hospital, private and dispensary practice. The frequency with which the various lesions appear depend upon from which source the cases were

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drawn, and therefore no attempt has been made to state the relative frequency with which the various conditions are found.

For the purposes of classification, a rough grouping of the cases has been made, based upon the pelvic findings. Such a grouping must necessarily be more or less arbitrary because of the frequency with which several conditions may be associated. In Group 1 may be placed: Injuries to the pelvic floor and cervix; Group 2, Displacements, retro and downward; Group 3, Pathologic tissue changes.

Before passing to a consideration of the conditions under the above grouping, the writer wishes to make brief reference to a frequently unrecognized condition that may have its origin in labor. The patient presents herself with symptoms that are a composite of "all the ills that flesh is heir to." Symptoms referable to the abdominal and pelvic organs and nervous system predominate. Careful pelvic examination shows no pathology. Such a patient belongs to that large but little understood class of neurasthenics. She is the obstetric neurasthenic. The same condition may be seen following operation, or any shock or trauma, only in this instance the causal factor is labor. It is usually seen in nervous impressionable women after first babies. She is deserving of the utmost consideration and often receives the least. This type of patient is most often found in private practice among the well-to-do and they often add materially to a lucrative clientele, so that their existence may not be considered an unmixed evil. The treatment of such a patient often begins with a curettage and then more or less rapidly she runs the gamut of the specialties. Or a slight cervical laceration is assumed, erroneously I think, to be the seat of the trouble, and repaired. Surgery should be avoided in such cases, for it usually makes matters worse. Fortunate is such a patient if she falls into the hands of a physician who treats the woman and not the womb.

Passing now to our classification, we find under the first group cervical and perineal injuries. Of the two, in the writer's experience, the cervical lacerations appear rather the more often for treatment. Not because they occur more often, but because perineal lacerations are usually repaired at the time of labor. The leucorrhea and subinvolution, that often accompany cervical tears, produce most of the symptoms that bring the patient to her physician. In addition to this may also be found markedly thickened and tender utero-sacral ligaments which contribute no small part to the discomfort of the patient. The question of immediate repair of cervical laceration has lately received considerable attention and opinion is divided as to its practicability. The writer's attempt at immediate repair in a few cases did not give satisfactory results and he is inclined to believe that delay for several days will give better and more certain union. This plan is carried out in some of the large lying-in-hospitals with complete success. For the prevention of cervical laceration, we have little that is practical. The forceps are old offenders, and in a consider-

able proportion of cervical tears there is obtained a history of instrumental delivery.

Perineal tears are seen oftenest in hospital and dispensary practice. They can, not infrequently, be traced to attendance by mid-wife or to cases whose medical attendant has been too busy or too ill-paid to attend to such detail. Ordinarily, however, such injuries are repaired at the time of labor. Indeed, minor tears with small vaginal involvement are best sutured while waiting for the placenta. Tears of second degree, however, extending well into the vagina, on one or both sides, unite best when sutured several days after the labor, when with good light, proper anæsthesia and good position the laceration may be sutured with good hope of restoring the normal relation of the parts. Even third degree tears can be repaired at this time with complete success. Many times a tired doctor, in a poor light, with his nervous, perhaps struggling patient in a sagging bed, places two or three silk worm sutures through the perineum. It is seldom that such stitches bring the vaginal wall into apposition and this part of the tear is left to take care of itself. Such a state of affairs results in the so-called relaxed vaginal outlet, which carries its promise of a rectocele later. Tears occasionally involve the vagina only without extending to the perineal body. If such injuries are not repaired the foundation for rectocele is laid. If the repair of the more extensive perineal tears is delayed for several days, a cervical tear can be sutured at the same time. This, it seems, would be a forceful argument for delay in such cases and the writer believes that some day cervical lacerations will receive the same attention as now do perineal tears.

Under the second group or group of displacements, we find, prominently, retroversion and prolapsus, with their protean manifestations. It is difficult to say how often a previously proper positioned uterus retroverts as an effect of labor, for the reason that a symptomless retroversion before pregnancy may become a troublesome one after labor. Still there is no doubt but what labor often acts as a causal factor in retroversion. No sequelæ of labor so strongly emphasizes the expediency of the post-partum examination. If three weeks after labor a uterus is found, large and heavy, which has a tendency to backward displacement, a properly fitted pessary may forestall a retroversion that takes its origin at that time, or may cure a pre-existing one. The writer believes, too, that the obstetric binder may have an influence, at times, in aiding displacement. In women with a thin abdomen and the uterus standing up prominently, a tightly applied bandage will tend to press the fundus back. To make matters worse, sometimes is also added a towel or two to form a pad beneath the binder.

A uterine prolapse is usually developed by a slow process as a result of retroversion. Still, sometimes, shortly after the woman rises after puerperium, a noticeable degree of prolapse may be found without necessarily any marked retro-displacement. Such conditions seem to be associated with stretching of the utero-sacral ligaments. In this connection it is

not unusual to find, soon after labor, a prolapsed anterior vaginal wall. In three instances the writer was able to trace such a condition to the use of forceps. In two cases forceps were used to drag a well advanced head through an imperfectly dilated cervix. Each traction on the forceps brought the cervical rim, as well as the anterior vaginal wall, well down into the vulva, which resulted in a stretching of all the supports which seemed never again to regain their normal tone. The third instance was a large head which as it advanced with traction, brought down conspicuously before it a large fold of the vaginal wall. Such a state of affairs might be avoided in part by pressing back the cervix and vaginal wall when traction is made. If, however, such a condition is found postpartum, a pessary will do much to give a sense of relief to the patient and also aid in restoring a normal tone to the tissues.

In the third group or cases embracing pathologic tissue change, endometritis and subinvolution are foremost in frequency. Endometritis is usually secondary to some other condition. The primary cases most commonly follow the retention of clots or bits of placenta with putrefaction. As a part of a general condition, it is seen in poorly nourished women who have convalesced badly. One of the most constant symptoms of which these patients complain, is a soreness across the lower abdomen. Walking or driving will cause it to be plainly felt. The uterus is sore to pressure and bimanual examination, or even pressure of the finger through the vaginal wall against the uterus elicits pain. Curettage here does not always prove of value and in cases associated with a general condition, such as just described, it is better to try and restore first the general health, assuming that the endometritis is an effect and not a cause.

Subinvolution is often a preventable, and like endometritis, many times a secondary condition. As a condition *per se*, a history of clots or bits of placenta coming away during the puerperium is not uncommon. There is no doubt, too, that it may be caused by the women getting about too soon. Some physicians keep their patients in bed nine or ten days and then allow them to sit up regardless of the size of the uterus. Such a system does not seem to be scientific obstetrics. Other things being equal, the time in bed should be determined by the involution. A large uterus, even at the end of three weeks, should mean rest and treatment.

To enter under this group into a discussion of the late results of puerperal infections, involves too large a subject for this time. They, of course, constitute a considerable proportion of the cases and they present an extremely varied pathology. In passing it may be said that in hospital practice a large proportion of such cases are supplied from the practice of midwives. The implied suggestion that is contained in this statement is obvious.

In trying to find the reasons for so many preventable pelvic conditions that result from labor, we find that there are certain factors that can never be eliminated. For example, many cases are clearly beyond our

control. A working woman has neither the time nor the care for a proper convalescence. She may have eight other children that demand her care and on the third or fourth day gets up to do the family wash. Even this situation might be met by providing hospitals for such women, granting that they could be persuaded to go to such institutions. In Europe such hospitals are supported by the government and the women of the poorer classes expect to go to them as a matter of course.

Other cases are due to either ignorance or wilful neglect. The consultant is often astonished at the failure of some men even to attempt a diagnosis of position. They drop to the level of the midwife instead of practicing scientific obstetrics. Such men will essay to apply forceps without the slightest notions of the relations of head and pelvis. This situation is one for the medical schools; it is at their door that the fault lies, and they hold the remedy as well.

Another reason resolves itself into dollars and cents. The inadequate compensation for a good deal of obstetric work does not permit a busy physician to devote the time and attention that such cases demand. It is a fact that there is no branch of medicine that is so ill paid as that of obstetrics. Such a state of affairs is partly due to the medical men themselves, and partly to the fact that the poor will persist in having children; and the more children they have so much the less able are they to pay a fee for medical attendance for the next.

The last and most important reason for pelvic conditions following labor is the failure of physicians to make routine post-partum examinations. A painstaking examination three or four weeks after labor will often disclose conditions which intelligent treatment would correct and in this way would be prevented many of the lesions that come to the surgeon for treatment.

LECTURES ON PSYCHIATRY.

(PLANNED TO INCLUDE SIXTEEN EXERCISES FOR SENIOR STUDENTS.)

By SIDNEY I. SCHWAB, M. D., of St. Louis.

Professor of Nervous and Mental Diseases, St. Louis University Medical School.

LECTURE 2.

A short sketch of the history of psychiatry will show clearly how the development of our knowledge of mental disease has come about and in what manner medical science as a whole has influenced it and been influenced by it. Historically considered, psychiatry has shared in the progress which knowledge in other departments has achieved, though it has never shown the brilliant and sudden advances in times when learning in general was at its highest; yet its development has been, on the whole, steady and can be measured less by the rigid achievements of exact knowledge than by a certain evolution towards improvement in the social conditions of a people.

On the whole it can be said that the condition of the insane reflected in the past the general state of a people's civilization, and bore a certain relation to the development of what might be termed institutional medicine. It must be admitted, however, that at all times, except at the present,—and this is only true of advanced communities,—psychiatry was the least favored of a State's dependents to share in the influence which advances in medicine brought about. The State's care of the insane, or rather, the concern of the State in the welfare of its indigent insane, might be taken as a measure of its advancement. The reason for this is that insanity is a very personal disease, as it may be termed, and touches not alone the physical aspect of an individual, but involves also his position as a member of the community in a very direct way and the consequences of a proper therapy touches the question of personal liberty and privilege, two important things in the life of an individual which other diseases involve only in an indirect manner.

There are two important points from which the history of psychiatry can be viewed and which will enable you, even in so brief a sketch as this, to obtain some general idea of its varied fate in the general history of mankind's development. One of these points of view, has reference to the origin and the evolution of the idea that some disturbance of the brain itself is a necessary condition of mental disease. Naturally this is but an additional step to the conception that the mechanism of all mental activity has its place of origin in the central nervous system; that is, in the brain itself. The other point of view has reference to the place

in society which individuals with mental diseases occupy. This is concerned with the attitude of physicians and laymen towards insanity, both in the individual case and with the problem as a whole. The former point of view is concerned with the history of the development of an idea; the second point of view with the history of the development of society as a whole. The first of these represents a remarkable phase in intellectual evolution, the succession of steps by which the conception of the relationship between the nervous system and psychical activity came about extends over many centuries, and its conclusion that this relationship is intimate, necessary and final, forms the basis upon which present day psychiatry rests. The gist of this conclusion may be stated in this way, representing as it does the final conclusion of years of observation and deductive reasoning: The mind or soul has its anatomical seat in the brain, the physiological activity of which finds its highest, most intricate and most human expression in the phenomenon of what we call consciousness. To define consciousness further, at the present moment, is not required. It is assumed that consciousness is the necessary unique characteristic of all normal human beings. Disturbances of various kinds which tend to create abnormal states of consciousness by virtue of which the normal expression of its activity in will, action or thought, affecting conduct as its outward indication produce the phenomenon which we call insanity. This, in a very brief and somewhat dogmatic manner, may be set down as the conclusion and the present result of the evolution of this long intellectual struggle. The history of the social aspect of the development of insanity forms a narrative which has an intimate relationship with the history of medicine as a whole. The brief story of the rise of psychiatry from a rough and crude aspect of demoniacal possession to its present state as an important and rapidly growing department of scientific medicine, is, briefly, as follows:

The earlier and primitive periods in the history of mankind might be considered an epoch, during which the conception of insanity was bound up in the religious notions of the people. An insane individual was looked upon as being either the subject of divine inspiration or as the victim of demoniac possession. Naturally, out of such a conception, no rational therapy or any rational attitudes toward insanity could be developed. This primitive period ended when Pythagoras established in Kroton, during the last quarter of the sixth century, B. C., a school of physiology and hygiene. From this, the Hippocratic era was ushered in. This was the era during which the objective examination of sick people was emphasized, and the insane were looked upon much the same as other sick people, and were regarded from the human point of view, from the prognosis, treatment and etiology. This Hippocratic period may be said to have extended to the third century, A. D., a time fixed by Galen, who was the last of the great ancient physicians.

Hippocrates really laid the foundation of psychiatry when he clearly expressed the proposition that in the brain was located the function of

the mind or understanding, and that therefore disease of the brain causes disease of the mind. Hippocrates recognized clearly the condition called melancholia and its sister symptom-complex, mania, regarding the latter as a sort of prodromal stage to the former. The ancients of this period regarded the cause of melancholia to be due to the collection of black, thick bile, or other corroding substances, which tended to flow towards the brain and, like a cloud, to darken the organ of thinking. During this period a considerable number of mental diseases were described with a degree of accuracy that even to-day is astonishing. Melancholia and mania were well known, and there was even a hint of the notion that they could be considered as different phases of the same disease. Hysterical and somnambulistic states were recognized, epilepsy and apoplexy likewise. There was even an indication of the idea that a difference existed between psychoses which showed themselves in emotional expression and those which showed evidences of deterioration. Shortly after this, we approach the beginning of the Middle Ages, during which medicine, in common with other branches of learning, declined. For a period of almost fifteen hundred years, there was neither advance in a knowledge of insanity itself as a science nor in the popular conception of insanity as a disease. In fact, we here meet a very low ebb in the history of human ignorance. The prevailing opinion was that man was composed of a spiritual and physical something, and that there was a constant struggle between the two; that insanity represented the victory of the evil spirit over the good. Consequently, an insane man was regarded as being possessed of the devil and his treatment was regulated accordingly. They were considered to be beyond the pale of society and almost beyond the protection of the law. The violent and dangerous ones were locked up in prisons, towers or underground chambers, with no regard to the needs of light, air or other hygienic necessities. On holidays, the insane were exhibited for fees to a curious public. The patients with mental disturbance of a milder form were allowed to run at large, receiving no care whatever. A temporary renaissance of psychiatry took place coincident with the life and activity of Felix Plater, Basle, 1536 to 1614. He was the first man who attempted a classification of insanity, or who, for twelve hundred years, had regarded the insane as worthy of study. Plater distinguished between congenital and acquired conditions, and described cases of idiocy and cretinism. The general scheme of classification is interesting; it is as follows: A. Lesions by defect: (1) Mental weakness, idiocy and imbecility; (2) mental abolition, epilepsy, apoplexy, etc. B. Lesions by deprivation: (1) Mental alienation, mania, melancholia, etc.; (2) mental anxiety, that is insomnia, etc. Plater, himself, noted the abuses which existed in the treatment of the insane and tried to gain for them greater liberty and humanity. His greatest service, however, was in reinstating methods of careful clinical study rather than in introducing effectual reforms in treatment. It took two

hundred years to accomplish the latter and it is not accomplished everywhere yet.

Up to the middle of the eighteenth century Austrian insane patients were confined in jails where they were chained and fed like animals. The populace was accustomed to walk out to this place of confinement on Sundays and holidays and pay the guards a tip to show them the ravings of the maniacs behind the bars.

In the later part of the eighteenth century, Pinel, in the old Salpêtrière Hospital, which was later to see the rejuvenation of French neurology under the master hand of Charcot, introduced the more humane treatment of the insane by insisting upon the removal of the coarse methods of restraint then in vogue and instituting the rational ideas of therapy which led to the conceptions now a matter of common routine in well conducted institutions. In England, about 1830, the no restraint idea, promulgated largely through the efforts of Connolly, came in use, and from that time there has been a steady and progressive development towards the point of view of regarding the insane as individuals with a definite disease that should be treated like other patients in a hospital. Some of the significant features of this movement are the establishment of psychopathic wards in general hospitals the after care societies, epileptic colonies, and the special institutions for the criminal insane. The recent bequest to Johns Hopkins by Mr. Phipps for the establishment of a psychopathic hospital is the most notable attempt yet made in this country to afford proper opportunity under university direction for the study of the problem presented by mental disease.

Insanity must be regarded as a universal disease which is met with in all countries and among all peoples. Its frequency, as can be shown by statistical study, is 1 to 384 in Germany, 1 to 300 in England, and according to the reports of associated asylums, in New York, 1 to 295. The latter State has at the present time an excellently organized State provision and supervision, and with a population of eight millions 1 of every 280 persons in that State is under the supervision of the Lunacy Commission. It can be seen from these statistics that the number of insane is very large and that forms no very inconsiderable proportion of the inhabitants of any community.

The question of the increase of insanity is important. There is a tendency to regard it as steadily increasing. It is very difficult to obtain the truth in regard to this question, as statistics are of very little value, with the exception of those collected in recent years and in States where the institutional care of the insane is well developed. It might be said that the increase in the ratio of the sane to the insane may perhaps be due to an earlier recognition of cases of insanity and to their more ready admission into asylums from which all statistics of value are taken. If there is an increase in the amount of insanity it probably goes hand in hand with the increase in syphilitic infection and with the increase of alcoholism. It is very possible that the increase in the number of in-

sane means simply the increase in the number of cases of dementia paralytica, which is the best example of an acquired form of insanity.

The general causes of insanity are somewhat difficult of description, as it is impossible to gauge the exact relationship between the causes that seem apparent and the effects of disease which follow. It might be said generally that no single factor stands out as the absolute cause of any single type of insanity, with the exception of syphilis in the causation of dementia paralytica. Even in this disease there are certain interposing steps before the development of the disease takes place which may have a great influence in determining its occurrence. There are, on the other hand, certain predisposing or favoring conditions rather than causes, which bear at all times a very important relation to individual outbreaks of mental symptoms. Yet it must be understood that these conditions of themselves are very seldom directly responsible for an attack of mental disease. The complicated methods of living, the difficulty of obtaining a livelihood, the struggle for actual existence, the increase in the consumption of alcohol and the spread of syphilis, are undoubtedly causes which favor the tendencies inherent in some organizations towards those abnormal states of consciousness which are termed "insanity." Undoubtedly, the chief positive etiological factor in the causation of insanity is in general terms hereditary. This is construed to be a congenitally unstable nervous system which is unable to resist the stresses and strains and other burdens which are placed upon it in an ordinary life time and by an ordinary life's experience. Such a nervous system congenitally weakened in this way, responds under certain conditions by giving rise to phenomena on the part of the nervous system which must be considered abnormal and which constitute a clinical picture which we call "insanity." In about 20 to 30 per cent. of all cases of insanity such a feature of heredity can be demonstrated. From 20 to 25 per cent. will show acquired causes in the way of syphilis and alcoholism; for the remainder there is practically no positive cause. It is said that the influence of heredity depends largely upon its degree, that the more instances of insanity in the family line, the greater its significance becomes. This is not altogether true; the nature and the degree plus the environment and other conditions must be factors reckoned with. The individuals coming from a stock hereditarily tainted or not, who exhibit from infancy peculiarities which separate them from the greater majority of the normal of their kind and position, are to be considered as favorable soil upon which insanity in any of its forms is given a chance to develop. In such individuals the effect of any of the indirect causes of insanity are active in a greater degree than the normal.

The term "degenerate" has received a great deal of importance and is defined by Morel as one whose brain and nervous system are unstable; who has in consequence, undergone imperfectly embryological changes to a higher type in tissues or organs, and therefore exhibits tendencies liable

to extinguish the race as a type under the usual conditions of the struggle for existence.

It was formerly supposed that degenerates could be diagnosed from certain imperfections which are known as the stigmata of degeneracy. It is now no longer thought that such physical signs are essential or, indeed, characteristic. The immediate factors which present predisposing and favoring opportunities for the outbreak of any individual case of insanity are puberty, climacterium, old age, pregnancy, parturition, puerperium and lactation.

There are certain causes which bear so indirect relation with the outbreak of a case of mental disease that they must be considered in a general notion as to causes. There is found in the past history of certain cases of insanity certain very definite experiences which are so closely related in point of time to the occurrence of mental symptoms as to suggest the relation of cause and effect. It is true, however, that certain evidences of mental aberration may have existed before they were brought to the notice of friends and relatives after the so-called causative factor has appeared. Such causes, which may be called direct, are as follows: Psychic trauma, physical trauma, diseases of the nervous system, infectious diseases, alcohol, lead poisoning, syphilis, cocaine, morphine, etc.

SPECIAL ARTICLES.

NOTES ON PELLAGRA.

By LOUIS M. WARFIELD, M. D., of Savannah, Ga.

At Columbia, S. C., on November 3 and 4 in the hall of the South Carolina State Asylum for the Insane, was held a most important and interesting conference. Whether it was the novelty of the disease under discussion, or whether there was a real undercurrent of actual alarm at the wide-spread prevalence of pellagra, is of no moment. The fact that over four hundred physicians from many states and from all branches of the Government medical service were there to gather information, attests the universal feeling in regard to pellagra. Representatives of many State insane asylums were also present, some to report on cases seen in their respective asylums, others to collect data which would be of assistance to them in the study of cases. No one of the Committee of Arrangements from the South Carolina State Board of Health anticipated such a large gathering. The idea which was first entertained of having a local conference was soon expanded to one of national and even of international scope. There were a number of papers from foreign authors. The objects of the conference were to get bearings on what was already known and to derive encouragement for further research. There can be no doubt but that the conference was in every way a signal success.

There have been so many excellent articles published recently in American journals which give full accounts of the history and symptomatology of the disease, that we shall only report briefly the points which seemed to us to be of particular interest.

What is this disease, known as pellagra, which during the past year has been reported from thirteen states from Florida to Illinois, and which, at present, it is conservatively estimated affects over 5000 people? There is much to make us pause for breath at such figures, especially when we recall that only two short years ago we were resting securely in the belief that there was no such disease among our population. Frankly, we do not know what pellagra is due to, or why it should be with us. With the increased knowledge of the disease, cases are being recognized here and there as pellagra, which for years defied diagnosis. There can be no doubt that the disease has been present in this country for many years. Those who took part in the conference not only re-

called cases seen by them ten and fifteen years ago which they are sure were pellagra cases, but there are actual notes written in autopsy records describing lesions of the hands and feet, which leave no doubt in the unprejudiced mind that they were cases of true pellagra. It is not a new disease. It is rather strange that it should have remained unrecognized for so long a time. To Dr. J. W. Babcock, of the State Insane Asylum at Columbia, S. C., is due the credit of calling particular attention to the existence and importance of the disease in this country.

Dr. Geo. A. Zeller, Superintendent of the Illinois Insane Asylum at Peoria, read an excellent paper, and reported a truly startling condition of affairs at the asylum. He told how his attention had been called to the disease by seeing the reports of Searcy, Babcock, Watson and others. Only last summer did he begin to suspect that there were cases at the asylum. Experts were sent for, and, on August 9th, twenty cases were discovered on a hasty examination of the inmates. Immediately a commission was appointed to investigate the problem, and Captains Siler and Nichols of the Army Medical Corps, were detailed by the Government to report on the cases. Since August 10, 1909, there have been 130 well-defined, undoubted cases of pellagra and 100 suspected cases among 2000 inmates. Of the pellagrins, 75 were women and 55 were men. Of these 45 have died, and autopsies were performed on 36.

Dr. F. M. Sandwith, of London, sent a paper. He stated that maize had been introduced into Egypt from Syria about 1840, but it was not until 1893 that pellagra was recognized. In 1900 there were cases discovered in South Africa. While in Boston, Mass., in 1905, he had seen a case in an Italian. He thought that it should be made a reportable disease and that there should be inspection of immigrants at ports of entry. Since 1888 there had been registration of cases in Italy.

Pellagra, as is well known now, has existed in Spain and Italy since the middle of the 18th century. At the conference it was reported from Egypt, Arabia, Yucatan, and Jamaica also.

The etiology is not known. There were some interesting papers dealing with this part of the subject, but no new light was thrown on our dense ignorance. Thus far no bacterium has been found that is constantly present. Blood, blood serum, macerated liver, spleen, and brain have been injected into the usual laboratory animals with absolutely no result. Lombroso's pellagrozin, the toxin obtained from diseased maize, was accorded scarcely a passing word. Examinations and cultures of blood and spinal fluid have revealed nothing in the nature of a protozoon. The blood changes are not characteristic. There is usually anemia of a chlorotic type. Lavinder reported a number of leucocyte and differential counts. He found usually a normal number of leucocytes. There was an increase in the number of large mononuclears. Eosinophilia depended upon associated infection with intestinal parasites. These findings were practically confirmed by Siler and Nichols.

Asst. Surgeon General Kerr, U. S. P. H. and M. H. Service, called

attention to the fact that both beri-beri and pellagra were thought to be caused by damaged food, the former by spoiled rice, the latter by spoiled corn. Again it was suggested by Taylor, of Columbia, that the diseases pellagra, sleeping sickness, and syphilis have much in common, and in view of the fact that the last two are due to protozoa, it may be that pellagra will be found also to be a disease caused by a protozoon.

That there is some relationship between the eating of spoiled or damaged corn and the development of pellagra, seemed to be the consensus of opinion. The foreign authors took it for granted that the eating of spoiled corn caused pellagra. The Americans were more conservative as a rule. The impression gained was that there was unquestionably some real relationship between damaged corn and pellagra, but that in the present state of our knowledge we could not say that it was the actual cause. Possibly, it was suggested, there was some substance in the spoiled corn which, when acted upon by the digestive juices, activated the real cause (bacterial, or protozoan, or chemical).

It was stated that the manner of treating the maturing corn differs from that formerly in use. Up to a few years ago the stalks were stripped and the grain on the ear was allowed to mature in the fields on the stalk. The corn so treated is thoroughly dry, and the grains are free from mold and rust. For several years past farmers throughout the great corn growing area in the Middle States have been in the habit of cutting the stalks and stacking them in heaps. The corn is still full of moisture and the ears point upwards. By so treating the stalks they make better fodder for stock, but the grain is very apt to undergo fermentative changes, and when husked it is not perfectly dry. It was said at the conference that damaged corn was usually ground into meal when the corn could not be sold in bulk. It was not uncommon for the price of a bushel of corn meal to be less than that of a bushel of corn. The reason is obvious. It was shown by the foreigners and by some of our countrymen that the importation of corn was followed in a year or two by outbreaks of pellagra. In Yucatan, we were told, the native corn crop failed some years ago and American corn was imported. There followed an epidemic of pellagra. The native crop for the next few years was sufficient to supply the demand and there were no further pellagra cases. Again the corn crop failed, corn was imported from the United States, and again pellagra broke out in epidemic form. Certainly this is very suggestive.

There was an attempt made to connect the disease known in horses as "blind staggers" and pellagra in man. A stock-raiser reported having fed his horses and mules on corn which he had "cured" by cutting the stalks while they were still green. This he had never done before. There had never been "blind staggers" among his stock. Following the feeding of this corn in which the kernels were found to be black, there broke out among his stock virulent "blind staggers." As soon as inspection of the corn revealed its damaged condition, feeding was stopped.

and oats was substituted. The disease was arrested, but a new stable man, against orders, fed some of the damaged corn, and again the disease developed. The cause of "blind staggers" is, so far as the writer knows, not known. This proves nothing but may lead to important investigations.

No specific pathology of pellagra has been described. H. F. Harris, of Atlanta, found minute changes in certain of the brain cells, notably in the Betz cells and in the Purkinje cells. Many autopsies have revealed extensive degeneration of the posterior columns of the cord, especially marked in the cervical region. These resemble the degenerations seen in tabes. Ataxia is not necessarily associated with these cord lesions, and the knee jerks are almost always increased in advanced cases. In one case, where the posterior roots were examined, no changes were discovered. Some have found degenerated areas in the lateral columns.

Siler and Nichols reported from the Peoria Asylum that about 50 per cent. of the inmates had amebæ in the stools. Of those suffering from pellagra, about 80 per cent. had amebæ. Dysentery was frequent. Many cases of extensive intestinal ulceration were found at autopsy. Examination of the water supply showed no amebæ, but in the tank on the grounds and in the pipes there were myriads of amebæ. They considered that the presence of amebic dysentery predisposes to the development of pellagra. The reason why pellagrous patients were more infected with amebæ, was possibly on account of the dementia and resulting untidy habits of such persons.

Bass, of New Orleans, reported a series of cases in which the Wassermann reaction was tried, using lecithin as antigen. His results seemed to show that there were specific antibodies in the blood of pellagrins. He was cautious in the interpretation of his results and promised to report further work. In 30 cases Howard Fox, of New York, did not succeed in getting the Wassermann reaction, using syphilitic material as antigen. These results do not conflict, as Bass used a lipoid substance as antigen, while Fox used material from inherited syphilis. Many competent pathologists are now actively investigating the subject, and it is hoped that by next year some characteristic lesions will be found.

No age seems to be exempt from this disease. There were reports of cases occurring in children from three years of age to puberty. Many fatal cases in children were reported. As the great majority of cases have been found in asylums for the insane, most of the cases on record have occurred in those in or past middle life. Women seem to be more prone to the disease than men. The colored females are especially attacked. The mortality is high in the advanced cases. The disease is essentially chronic.

There is a seemingly definite triad of symptoms coming on in the order named—diarrhœa, dermatitis, dementia. The initial symptoms are usually diarrhea and stomatitis, accompanied, at times, by distinct mental hebetude and apathy. The tongue is usually red, especially at the edges,

and the papillæ stand out as bright dots—the so-called stippled tongue. The attacks occur usually in the fall or spring. The first lesion on the skin occurs on the backs of the hands and wrists and looks much like sunburn. There is sharp demarcation from the healthy skin of the forearm. The elbows are often roughened and a triangular patch of discoloration ending in a point, and extending from the elbow down the extensor surface of the arm for several inches, is characteristic. The early skin lesions may heal perfectly leaving the skin as soft as before, but as a rule, there is a residual roughness and dryness of the parts. The bronzing of the body was a point to which attention was called. The lesions are symmetrical. Later, lesions occur on the dorsal surfaces of the feet, on the back of the neck, at the elbows, on the forehead and cheeks. Frequently ulceration occurs which may be extensive and even go on to gangrene. By this time the mental state of the patient has changed. No characteristic form of mental deterioration is present. Some of the Richmond men called attention to weakness of the extensor muscles of the thumbs, causing a position of the thumbs which they designated, thumb drop. The patients die of exhaustion, or a terminal infection carries them off.

It is not difficult, as a rule, to diagnose a moderately well-marked case. The history of periodical attacks of diarrhœa, the sunburn-like eruption on the hands or hands and feet, and the curious dry, rough, and discolored skin suffice to render the diagnosis sure. First attacks may be difficult to recognize, but pellagra should be suspected when there are diarrhœa, stomatitis, and symmetrical skin lesions. Pustular syphilids, eczema, and burns must be excluded. The symmetrical character of the lesions is exceedingly important.

The opinion of the conference was that pellagra is not an infectious or communicable disease. Stress was laid on prophylaxis as the most important means of combating the spread of the disease. This opinion was formulated in the following series of resolutions:

Resolved, That this conference recognizes the wide-spread existence of pellagra in the United States, and urges upon the national government the necessity of bringing its powerful resources to bear upon the vital questions of its cause, prevention and control.

“Resolved, That while sound corn is in no way connected with pellagra, evidences of the relation between the use of spoiled corn and the prevalence of pellagra seem so apparent that we advise continued and systematic study of the subject, and, in the meantime, we commend to corn growers the great importance of fully maturing corn upon the stalk before cutting the same.

“Resolved, That the work of this conference be brought to the attention of the various state and territorial boards of health, and they severally be urged to specially investigate the disease, particularly as regards its prevalence, and that they also see that proper inspection of corn products sold in the various states be had.”

It will be noted that the chief point in prophylaxis centered around the production of sound corn. No blame was attached to good corn. This is important to note. It is only spoiled corn which is to be feared.

Lowered vitality, due to bad hygienic surroundings, poor food, and infection with hook-worm and amebæ, predispose to the development of pellagra. However, cases were reported among people in good circumstances. It was suggested that whiskey made from corn might be a factor in producing the disease. It must be borne in mind that no cereal is so widely consumed for food as corn.

Treatment of mild cases consists in withdrawing corn and corn products from the diet, in giving a full, nourishing diet, and in improving the hygienic conditions. Very little drugging is used. Symptomatic treatment for the anemia is recommended. The one drug which was universally recommended was arsenic, either in the form of Fowler's solution or atoxyl. In severe cases atoxyl was administered by injection, gr. $\frac{1}{2}$ to $\frac{2}{3}$ twice daily, three times a week. Cole and Winthrop, of Mobile, Ala., reported nine cases in which transfusion of blood was performed. The donors were healthy persons or those supposed to have recovered from attacks of pellagra. The report was interesting but not at all convincing. It was stated by some that in hopeless cases, such as were reported, it might be used as a last resource. Attention was also called to the report of two Italians, published thirty years ago, telling of the treatment of four cases with blood serum of cured pellagrins. One case died, three recovered.

At the last session of the conference a permanent organization was formed. Dr. J. W. Babcock, Superintendent of the South Carolina State Hospital for the Insane, called by the conference "the father of the movement for the study and control of pellagra in America," was elected president. The first meeting of the organized association will be held next June at Peoria, Ill. It is hoped by that time we shall have learned something definite about this most important disease.

INDISCREET CHAPTERS IN HISTORY.‡
(Les Indiscrétions de l'histoire.)

By DOCTEUR CABANES.
Translated by Dr. Philip Skrainka.

CHAPTER II.
OF WHAT DID LUTHER DIE?

How many contradictory reports, how many futile hypotheses, how many rumors, have circulated since the death of Luther! In truth, the manifold versions which have been advanced in regard to his last moments only increase the difficulty of trying to solve the problem which dominates this chapter, and which may be formulated into the question, What disease caused the death of the great Reformer?

Recent researches* which have enlightened us as to Martin Luther's constitution have made plain that his diathesis was of the arthritic type;** lithic, hemorrhoidal, and gouty. The crises of nephritic colic alternated with those of podagra. "I moan with fever which is the malady of the Germans," he wrote one day, "just as gout, it is said, is the English disease." The descriptions of his own illnesses show him to have been a consummate observer, possessed of animation, and gifted with picturesque vigor of language but seldom equalled. Here are some of his candid words which are quite innocent of all periphrasis: "When I went to stool, the part of the intestine which passed through the anus had the size of a nut. Afterwards it remained as a projection resembling a grain of hemp-seed, which itched and inconvenienced me much more when the stools were soft. When I passed clotted blood I felt more at ease, and was in a better frame of mind. The act of defecation was become a joy to me since it increased the flow of blood so well that the pleasure derived from this sensation induced me to resort to the latrine many times during the day. When I pressed the parts with the finger, they itched in an agreeable manner, and then the blood would flow."† So excessive was Luther's constipation that it amounted to a continual torment, an obsession that weighed upon him; and he did not hesitate to make

*These have been summed up by Dr. Paul Cornet in an article in *Le Progrès médical* of March 6, 1909; and even prior to this date Dr. Pergens published a similar article in *Janus* for August, 1908.

**Authorities are not at one as regards Luther's hereditary antecedents, but they are agreed that he had a wretched constitution. His first known malady was a severe attack of fever without sequelæ when he was fourteen. These febrile accesses recurred five years later. From 1508 to 1521 all information is lacking. Lithiasis declared itself in 1521; after many attacks calculi formed; and in 1526 one of these calculi was found to be very large. At the end of 1523 Luther had an attack of syncope.

†Letter to Julius Jonas (January 6, 1528).

‡Copyrighted, 1909.

his friends the recipients of confidences in regard to this prosaic chapter in his private life.

In 1522 Luther, then 39 years of age, wrote to Melancthon: "The Almighty has seen fit to strike me in the back; my stools, on account of being very hard, compel me to make such fearful efforts that the sweat rolls down my face. Yesterday I went to stool after four days; the result was I did not sleep all night." The pills which Luther swallowed had only a passing effect, the constipation lasting at times from five to six days. His temper was greatly affected by this. Periods of prostration alternated with crises of excitation; and though we are not in a position to assert that a chronic intestinal paresis was wholly responsible for these manifestations, we nevertheless are justified in affirming that it had some influence on his character. He who enjoys but imperfectly "the real happiness of life," to quote Montaigne, ought surely to command our pity.

As earnest investigators we should search for an explanation of the attacks of vertigo and syncope, and of those aural noises of which Luther so often complained, and which he attributed to the machinations of the devil whom he believed in possession of his body and soul.

* * * * *

Above all, the hallucinations of sight and hearing in Luther's case demand considerable attention, since they played a prominent and active part. As Moreau de Tours has said, "the hallucinations of Luther were not less numerous and not less authentic than those of Loyola." Various authors have asserted that his numerous conferences with the devil were a sort of myth, imagined by Luther himself, but the facts in the case are against this opinion, for his writings attest to their authenticity. In his treatise, "*De missa privata*," in which is recorded his vision of the devil and his conference with the Evil Spirit, after exalting the prowess which Satan possesses and mentioning Satan's impatience of lengthy discussions, Luther says: "Now I have the explanation why it happens that men are found dead in bed; it is Satan who twists their necks and kills them." The records also speak of his self-imposed tasks, "his prayers, his vigils, and all sorts of austerities which were made more severe by excessive fasting, and finally caused such hebetude that he was incapable of listening to reason or working, for weeks." His sexual abstinence, conjoined, as it was, with these mortifications, has been mentioned as the cause of "periods of excitation which, thanks to a strong volition, the virile Preacher victoriously surmounted until his marriage." As for his attacks of vertigo, let us hearken to Luther himself, since he has left us a very good description, albeit his interpretation is not as scientific as we would wish.

Luther, at twenty-seven, suffered from buzzing in the ears, and as he was ignorant of physical science, he attributed the phenomenon to the devil. He thus expresses himself: "The aches in my teeth and ears are

worse than the pest. I am tortured by a blowing and buzzing in my ears as if wind were rushing through my head. The devil is within me for some purpose. You cannot conceive how horrible is this vertigo; day after day I find it impossible even to read a letter, or two or three lines of the Psalms. At the end of three or four words the blowing recommences and I almost fall from my chair." This happened in 1510. In 1530 Luther wrote: "When I attempt to work, my head is filled with all sorts of noises, with buzzing, with whistling, with peals of thunder; and if I do not quit my work at once, I faint. These last three days I have not been able to read my letters. I have had another visit from the devil. My malady is the result of the usual feebleness of old age, constant mental tension, and above all, of the castigations of Satan. No medicine in the world can cure my disease."

These noises in his head and ears were so misleading that when, in 1521, a box of nuts had been placed in his chamber, he thought that the devil was responsible for shaking them. "When I had blown out the light and got into bed," says Luther, "it seemed to me that the nuts began to move, and not only did they leap over each other but they knocked against each other, and before long they advanced towards me, and the noise was next my bed. Nevertheless, I took no notice of their unseemly behavior but slept on. However, from time to time, I was awakened by a great noise on the staircase, as if someone were throwing hundreds of tons of nuts in quick succession down the steps. I got up and cried out: 'Is that you, devil? If so I commend my soul to God.' Then I went back to bed and slept. Once, at Wittenberg, I distinctly heard the devil make a noise; he made the noise thrice in the garret and it seemed as if he were dragging something heavy along the floor. The noise continuing I left my books and retired for the night." One day, during a severe storm, Luther exclaimed: "It is the devil who is doing this. Ah! How the devil blows!" On another occasion he wrote: "Idiots and cripples, the blind and the deaf, are the persons in whom the devil elects to dwell. All the doctors who essay to cure these infirmities, in the hope of proving their natural causes, are ignorant fools. They know neither the devil nor his works."*

Some authorities have attempted to see in these diabolic manifestations the symptoms of Ménière's vertigo;*,** while others have proposed an altogether different explanation. As regards the diagnosis of Ménière's vertigo, we must contend it is a bit premature when applied to this period of his life, but is quite applicable to a later epoch when the noises became more and more annoying, first in the left ear and then in both, and when, as happened in 1541, the aural discharges were more or less bloody. If there was an otitis externa, a theory advanced by a certain specialist,† was it not really a sub-acute otitis, supervening

*Journal des Connaissances médicales, 20 oct. 1887.

**See Archives de neurologie and The Medical Record for 1887.

†Küchenmeister. Dr. Martin Luther's krankengeschichte. Leipzig, 1881.

in consequence of a chronic catarrh of the Eustachian tubes with complications of perforations of both tympanic membranes? The latter opinion* fits in better with the clinical picture of the case as revealed to us in the autobiography of Luther.

The question which is quite important to ask is, Was gout the underlying cause of his aural affection? Authorities are undecided on this point. Another matter that might engage our passing notice, is the fact that he was emmetropic and wore weak convex glasses; and that one eye was cataractous. That he had an ulcer of the leg; attacks of sciatica, and suffered from rheumatism are matters to be expected in one of an arthritic diathesis. After due attention to all his chronic ailments, our surmise is that death was caused by heart failure consequent upon arteriosclerosis. Even admitting this to be only a hypothesis** we should not forget that it might be weakened by the facts in the case.

* * * * *

Luther's end was sudden and unexpected; but the sort of life he had led would warrant such a demise. Surely we are not attacking his memory when we note his intemperance. Does he not himself indulge in self-praise for "eating like a Bohemian and drinking like a German?" Wine was a luxury, but the drinking of beer was a daily habit. "I conquer the world by drinking my pot of beer," he never tired of repeating. Authorities who would feign make Luther out to have been abstemious, quote without fail the testimony of Melancthon, who asserts that he saw Luther "when he was in good health" pass four entire days without either eating or drinking. But they forget to add the most important part of this statement, to the effect that "on the contrary, he [Luther] was not ashamed to drink a good draught every now and then; a habit he excused by saying, 'Here is the wherewithal to thwart the devil when one wants to continue joyous.'" A singular regimen, indeed, and one that could only aggravate his many ailments.

The year preceding his death, according to his biographers,† was characterized by his "suffering without cessation from violent pains in the head, from stone; and his legs were swollen and his eyesight was diminished." Despite the miserable state of his health, this old cacoehymic undertook a voyage that was about the most laborious one can imagine. We are now speaking of the month of January, when the winter was at its height and the cold was excessive. To Count Albert von Mansfeld, who had sent for Luther, hoping through his arbitration to settle a family dispute, the Elector John Frederick, his suzerain, had said: "Dr. Martin Luther is old and worn out; you would do better to spare him." And Luther himself, writing to a friend, said: "I am

*W. Ebstein. Dr. Martin Luther's krankheiten und deren Einfluss auf seinen Körperlichen und geistigen Zustand. Stuttgart, 1907.

**See *Le Progrès médical*, loc. cit.

†Luther, *sa vie et son œuvre*, par Félix Kuhn, t. III. (Neuchâtel et Genève, 1884), p. 359.

aged, exhausted, languid, and fatigued, and I see only out of one eye. I had hoped that being so near death I would enjoy the repose which I have so well merited, but I am being deluged with writings, discourses, and all sorts of business, as if I had never worked or written or lectured in my life."

On January 23, 1546, Luther started on his journey and arrived at Halle two days later. An inundation of the river Saale detained him there three days. He consoled himself by drinking "the good Torgau beer and the good Rhine wine." On January 29, he departed; and although the river was high and turbulent he made it a point to leave his bark, and bathe. At the frontier of Mansfeld, an escort of honor, consisting of one hundred and thirteen cavaliers, awaited him to conduct him to the lords of the country-side, who were to be his hosts. At some distance from Eisleben, he expressed a desire to walk. The coach was stopped and Luther walked until he perspired freely. When he got back into the coach he was seized with a chill; this was followed by vertigo and labored respiration; then he became very weak. Arriving at Eisleben he immediately went to bed, was rubbed down and placed in warm linens. The next day he was better.* But the warning he had received was without avail. Some days later he sent the following message to his wife: "We live very well here; the Council sends me for each repast a demi-measure of Rhenish wine. I always drink a little of it with a companion. The wine here is good, and although the beer of Naumburg is delicious, I have an idea the resin it contains is responsible for the phlegm in my stomach."

A letter which Luther wrote, four days before his death, to Melancthon makes known to us his desperate condition at this date. From day to day his sufferings increasing, he became more and more dissatisfied, and he hastened to arrange the differences which divided the Counts of Mansfeld. His attacks of vertigo and headache recurred; he attributed them to the closing of a cauterized wound in his left leg, which had cicatrized on account of not having been cauterized for some time. On Sunday he suffered intensely and on Wednesday his strength was nigh spent. In the evening before dinner he complained of an oppressive sensation in his chest and asked to be rubbed with hot cloths. He ate moderately and went to bed sooner than was his habit. Hardly had he entered his room than he felt anew the oppression experienced in the early part of the evening. One of the watchers who sat at his bedside suggested he should take unicorn's horn, assuring him that there was no remedy more efficacious in like ailments. At once, measures were taken to procure the precious drug; and after being grated it was administered in a spoonful of wine. In the middle of the night he was seized with difficult breathing. "O, God," he sighed, "I am so ill; I am in agony; I feel I am going to die." Despite frictions with all sorts of balms and

*Félix Kuhn. *op. cit.*, t. III., ch. VI.

essences brought to the sickroom by the Countess of Mansfeld, the coldness of the body increased, the breathing became barely perceptible and the flame of life was almost extinguished. "Then his breathing indicated gentle sleep and only a sigh, in which he seemed to render his spirit to his Maker, disturbed his last rest."

* * * * *

It has been said that this version of the last moments of the great Reformer, which we have condensed into a few lines, was inspired by his entourage in the hope that so favorable an account would be a protest against the many rumors put into circulation after his death, and to which we will revert later on. Here it would be well to mention the deposition of an eyewitness, who was a Catholic, and on account of whose religion it would be foolhardy to make accusation of any partiality for Luther. This witness was an apothecary, by the name of Jean Landau, and he had been called to the bedside February 18, 1546, at three in the morning. We owe our knowledge of this important matter to an adversary of Luther, who claimed he got the deposition from a burger of Mansfeld whose name he could not divulge.* But it is imbued with so much sincerity that we cannot doubt its authenticity.** It thus runs: "Wednesday, February 17, Luther showed again his joyous spirit at table; he made everybody laugh by his pleasantries and his gay remarks. But towards eight o'clock he did not feel so well. After midnight two physicians were called in haste: a doctor of medicine and a magister. On their arrival the patient's pulse beat no longer. This is why, towards three o'clock, an apothecary was awakened and received the order to prepare a clyster and take it to Luther. After arriving he prepared and warmed the clyster according to the physicians' directions, and, whilst doing this, thought he detected life in Luther. But upon turning the patient to give the clyster, he saw that he was dead. Turning to the doctors the apothecary said: 'He is dead; what is the need of the injection?' Count Albert and some scientific men were of a like opinion. But the physicians replied: 'What does it matter? Give the clyster so as to revive him if perchance there is a breath of life remaining.' On inserting the canula the apothecary noticed flatulence and borborygmus, because the body was filled with liquids on account of excesses at the table. In fact, Luther's pantry was always sumptuously provisioned and when dining with his hosts there had always been an abundance of native and foreign wines. It was reported that Luther drank a 'setier'† of these wines at each repast. Directly the apothecary injected the clyster, the solution which had been so magnificently prepared was spread over the bed. The apothecary then said to the physicians: 'The clyster will

*See *La Chronique médicale* of February 15, 1900.

**This is the translation which Dr. Emile Laurent reproduced in *La Chronique* from the thesis of G. Claudin entitled "*La Mort de Luther*." Noisy-le-Sec: Debarle, 1895 (Thesis of the Protestant Theological Faculty).

†An obsolete measure. (TRANS.)

not remain.' They answered: 'That will suffice.' The physicians got together and discussed the cause of death. The doctor of medicine said it was due to an attack of apoplexy. Were not the lips convulsed and the right side all black (*visa est enim tortura oris, et dextrum latus totum infuscatum*)? But the magister thought that a man so saintly could not die from a stroke administered by the hand of God; but had succumbed following an attack of suffocation (*dicebat fuisse catharum suffocativum, et per viam suffocationis mortem intrasse*)."

To determine exactly the nature of Luther's last malady from these vague indications is surely a difficult task. And what is most annoying is the fact that our chances of being better informed by means of other authorities are indeed quite the opposite of encouraging.

Dr. Bruck, Chancellor of the Elector of Saxony, writing to the Elector, stated that Philip Melanchthon had spoken to him of "an oppression of the chest," that Luther had cured the year before by using the bark of pomegranate. And this same Melanchthon, in a lecture delivered at Wittenberg the day after Luther's death, advanced the opinion that his master's end had been due to repeated attacks of his chronic disease, "oppression from the humors at the orifice of the ventricle" (*non apoplexia, non asthmate extinctus est * * * sed humore in orificio ventriculi versus pectus impulso*). We wonder what was understood, in Melanchthon's time, by obstruction of the ventricle through the humors!

By the term "ventricle" the stomach is understood. Therefore did Luther have acute or chronic indigestion? According to the official report, from which we have already quoted, Luther ate but sparingly during his last repast; on the other hand, according to other witnesses, he dined copiously. Face to face with these contradictions, how is one to arrive at a just conclusion?

The torsion of the mouth, if it was really present, would confirm the idea that Luther had a cerebral hemorrhage with apoplexy; but though we might be inclined to this opinion we should pause, nevertheless, long enough to note another hypothesis, albeit suggested by a document which has small claim to truth. This hypothesis emanated, in fact, from Luther's servant, who was a convert to Catholicism and who, while under the influence of his conversion, wrote the extraordinary article which is printed below. But what should not be overlooked is the fact that the servant's account did not appear until forty-six years after Luther's death.

* * * * *

In 1592, the oratorian, Th. Bozio, published at Rome a work (*De signis Ecclesiae*, lib. XXIII., c. 3) in which he related that a former domestic of Luther's had told him that Luther had hanged himself on his bed. In a book published at Antwerp in 1606 (*Præscriptiones adversus hæreses*) the Franciscan monk, Sedulius, printed for the first time the complete deposition of the domestic already alluded to by Th. Bozio.

The veracity of the domestic's document goes unquestioned since it was written by one who was deeply religious. In 1895, G. Claudin reproduced it with a translation in his thesis, "La Mort de Luther." The following is Claudin's translation;* "Your religious solicitations prompt me to brave the indignation of men and the fear of offending them by being a witness to the truth; and my respect for the Supreme Being and all the Saints goads me on to still greater action....For the glory



of Christ and the edification of the Catholic world I shall lay bare to the light of day all that I have myself seen, and announce the same to the princes assembled at Eisleben. I shall not indulge in hatred nor shall my object be the acquiring of the good opinion of anyone. Here is what occurred: It so happened that on a certain day Martin Luther was entertained at Eisleben by some of the most illustrious lords in Germany. His weakness for drink overcame him, and it was necessary for us to lead him from the room in a state of drunkenness, and put him

*Chronique méd., 1900, p. 99.

to bed. After wishing him good-night we went to our room with no thought of the possibility of anything untoward occurring to Luther, and we soon slept peacefully. Next day when we entered the room to aid our master to dress, as was our custom, we found him, O horrors, him, our Master Martin, hanging from his bed and horribly strangled. This awful spectacle struck us with terror, but without hesitating for long we went in all haste to notify the princes, his convivial companions of the night before, of the abominable end of Luther. They were terrified as much as we, and conjured us to keep silence lest the news would get abroad, at the same time making all sorts of promises if we would obey. They told us to free the horrible corpse at once, place it upon the bed, and then go among the people and circulate the report that my Master Martin had died suddenly."

The account of the suicide,—an event that cannot be supported by any occurrence in Luther's life,—appears on its face to be surcharged with untruth. To suppose that so joyous an epicurean would end his life in this miserable fashion, is certainly a pleasantry that appeals strongly to our risibles. But, on the other hand, if we wish to explain his end,* though it was an untimely one, in true scientific fashion, so as to avoid criticism, it will be necessary to recall Luther's pathological condition during many years of his life. We feel that this is the only way out of all difficulties, and also the only method to pursue to arrive at some degree of clarity in a controversy that has not always been free from religious passion.

The great disturbance in Luther's chest and the oppressions of which so much has been written, can be attributed only to one of two diseases, angina pectoris or pneumonia. Upon studying Luther's disease, we fail to come across any mention that bears resemblance to the *coup de griffe* of angina pectoris, "the painful paroxysmal affliction which occurs all of a sudden without any appreciable cause.** Without doubt, angina pectoris is often a concomitant of gout or rheumatism, and we know Luther was both gouty and rheumatic; but the symptomatology of this cardiac neurosis is not found in the picture which we have reconstructed in regard to his last illness. The details of his last voyage, and the chill which evidenced itself some days before the final crisis, and from which he never completely recovered, strengthen our belief that Luther succumbed very prosaically to pneumonia. Moreover, this disease, when it occurs in the old, is generally insidious, "the chilliness is insignificant and the pain in the side may pass unperceived (G. Dieulafoy)."

Of course, in the absence of data that are trustworthy, we have but a slender foundation to build on; and though we are inclined to think that our opinion is quite near the truth, we feel that so little has been vouchsafed us in the way of correct clinical notes, that even our enthusiasm will not allow us to admit that our theory is anything better than a strong likelihood.

*La Fin de Luther, par le docteur Majunke; translated from the German by the Abbé Schlincker. Paris: Hte Walzer, 1893, p. 15.

**Manuel de pathologie interne, par G. Dieulafoy (Paris, 1885), t. I., 349.

MEDICAL AND SURGICAL PROGRESS.

PELLAGRA IN THE UNITED STATES.

A REVIEW OF RECENT LITERATURE.

By JESSE S. MYER, M. D.

1. NOTE ON PELLAGRA IN MARYLAND.—Thayer (*Johns Hopkins Bulletin*, July, 1909).
2. THE ETIOLOGY OF PELLAGRA.—Lavinder (*New York Med. Jour.*, July 10, 1909).
3. NOTES ON PROGNOSIS AND TREATMENT OF PELLAGRA.—Lavinder (*Public Health Reports*, June 18, 1909).
4. PUBLIC HEALTH REPORTS, September 17, October 22, October 29, 1909.
5. PELLAGRA, ANCIENT AND MODERN.—King (*Jour. A. M. A.*, November 6, 1909).
6. PELLAGRA: ITS OCCURRENCE IN COOK COUNTY INSTITUTIONS.—Pollack (*Jour. A. M. A.*, October 2, 1909).
7. THE TRANSFUSION OF BLOOD AS A THERAPEUTIC AGENT IN A CASE OF PELLAGRA.—Cole.
8. PELLAGRA IN VIRGINIA.—Hewitt (*Jour. A. M. A.*, October 2, 1909).
9. PELLAGRA IN THE UNITED STATES.—Wood (*Jour. A. M. A.*, July 24, 1909).
10. PELLAGRA, WITH REPORTS OF NINE CASES.—Bondurant (*Med. Record*, August 21, 1909).
11. THE PREVALENCE OF PELLAGRA IN THE UNITED STATES.—Lavinder-Williams-Babcock (*Public Health Reports*, June 18, 1909).
12. CONFERENCE ON PELLAGRA, COLUMBIA, S. C., November 3-4, 1909 (*Jour. A. M. A.*, November 13, 1909).
13. LITERATURE ON PELLAGRA (*Jour. A. M. A.*, November 13, 1909, p. 1657).

There is perhaps no subject which is absorbing the attention of American physicians at the present time, and especially those of the South, more than is pellagra, a disease which has in all probability existed in America in considerable numbers for many years. The weekly reports of new cases are coming in, especially from various sections of the South where their existence had not even been suspected. To the medical profession its great interest at this time lies not alone in the discovery of new cases, but in the exact determination of its cause. While the cause is considered definitely settled by some, it is openly

questioned by many others. The first authentic accounts of the disease came from Spain in 1762, when Gaspar Casal described it under the name of "mal de rosa." The ancient and modern history of the disease has been thoroughly entered into by Thayer, Wood, King, and others, and is an exceedingly interesting chapter in present day medicine. The first mention of the disease in this country was made by Harris, of Atlanta, in 1902 (*Am. Med.*, 1902, IV. 3). In 1907 Searcy (*Jl. A. M. A.*, 1903, XII. 3), reported an epidemic of acute pellagra in the insane asylum at Mt. Vernon, Ala. In October, 1908, a conference was called by the State Board of Health of South Carolina, the papers read at this meeting being published in pamphlet form (Conference on Pellagra, Columbia, S. C., 1909). Last month a similar Congress was held at Columbia, S. C., in which a large number of most interesting papers were read and discussed by those both in this country and from abroad who are interested in the subject. Here pellagra was discussed in all of its phases,—its clinical aspects, its pathology, its etiology, its skin manifestations, its importance as a national health problem, the hematology, relation to insanity and nervous diseases, the Wassermann reaction, the treatment, and from many other standpoints.

Thayer, in a recent article, goes into a rather extended discussion of the etiology, symptomatology and pathology of the disease. It is characterized by symptoms of three main classes: (1) those related to the alimentary tract; (2) the cutaneous manifestations; (3) the nervous and mental symptoms. One of its most characteristic symptoms is stomatitis, which may be extremely severe. A peculiar exfoliating, pigmentary dermatitis occurs on the parts of the body exposed to the sun's rays, and while he believes that the sun has a decided influence in causing the eruption to appear on the hands and face and the dorsum of the feet in those who go barefooted, he quotes Neusser to show that, in children who go about almost naked, the distribution is the same. Vertigo is common. The nervous symptoms are mainly referable to lesions in the cord, as sclerotic changes are found, especially in the lateral columns of the dorsal cord. Among the more prominent mental symptoms are confusion, feeling of anxiety, and disorientation as to time and place. The patient looks dull and serious and in the later stages profound dementia occurs. Two forms of the disease are recognized, (1) an acute typhoidal and (2) a milder chronic, or recurrent form. The first runs its course in a few weeks with delirium, fever, and diarrhoea. The second form may last for as many as 25 years. The exacerbation occurs in the spring and fall. In the interim the patient may seem entirely well. Though the generally accepted theory is that the disease comes from eating bad or mouldy Indian corn, there are those who dispute this theory.

Lavinder maintains that the etiology of pellagra, in a definite scientific sense, is unknown. Still, different students of the disease hold profound convictions on the subject. The predominant idea, one which exists even in the earliest literature, is, that there is some relation between the disease and the use of Indian corn. Those who adhere to this view in its various forms and modifications have been called Zeists; the anti-zeists deny any direct or indirect influence from Indian corn. Ballardini early claimed that the disease was due not to healthy maize, but to that which had been attacked by a certain bacterial growth (sporosorium maydis). In support of the Zeists it has been noted, (1) that only in countries where maize-eating is common is pellagra present; (2) that it is most common where maize is an important article of diet of the poor, although many such communities have no pellagra; (3) that in countries

where maize is not used there is no pellagra however close they may be to pellagrous districts; (4) that the ingestion of maize may cause pellagra in any district where it has been unknown and its removal may benefit those already suffering from the disease. The author then discusses the modifications of the maize theory: (1) whether the disease be due to the maize itself lacking in nutritional factors; (2) whether good maize is toxic; (3) whether the toxin is produced by the action of a sporophyte on the grain (this is the most popular idea); (4) whether an autointoxication, due to bacterial or digestive fermentation of good grain or bad grain in itself not toxic; (5) whether pellagra is a specific infection by some mould or bacterium. Tizzoni, in a recent paper, claims to have isolated organisms from the blood and stools of patients as well as from the maize. The "anti-zeists" base their views on the fact that pellagra is confined to so small a part of the maize-consuming communities, and that so many cases are reported in which no history of the use of maize in any form can be elicited. Sambon in 1905 suggested that the disease is due to a protozoa. Much of the confusion seems to lie in the variety of contradictory experimental observations. The beneficial effects of arsenic, claimed by some, lends strength to the protozoal theory, but this theory is scarcely more than a suggestion as yet.

The prevalence and distribution of cases in the United States has been carefully considered by Lavinder, Williams, Babcock and others, and interesting facts were brought out. Forty-five years ago two cases of probable pellagra, with mental symptoms, were reported. Exclusive of two cases reported in 1902, the disease has, since 1864 until 1906-7, disappeared, been overlooked, or called by another name. A number of cases were recognized and reported in 1907 from Alabama and South Carolina asylums. Recently letters of inquiry were sent to the superintendents of State hospitals for the insane in the United States with the result that there are about 1000 cases scattered through thirteen States, more than half of them having been reported from asylums and similar institutions. Lavinder believes 1500 to be a conservative estimate for the number of cases in the Southern States since 1906. In the Peoria State Hospital for the Insane, caring for 2200 patients, 40 to 50 well-marked cases were found. It has probably been in the institutions for eight years, according to the superintendent. Cases are reported from Beaufort, S. C.; Georgetown, S. C.; Jacksonville, Fla.; Key West, Fla.; Wilmington, N. C.; New Orleans, Camden, N. J., and 21 cases from various parts of Texas. The Board of Health of New Orleans reports four deaths in September. Maryland reports the first death in that State of a lifelong resident in the State. Pollack presents fourteen cases from Cook county institutions, five native born; of the foreign born, one had been in the country six months, the others eight to thirty years. The course in these later cases (those treated with Fowler's solution) has not been so severe and the results are somewhat promising. Hewitt reports a case of pellagra of the milder type in a patient aged 56 years, who had spent all his life in Virginia, with the exception of three years in Nebraska. He had eaten, of late, more and more corn meal, which had never agreed well with him and therefore he had avoided eating it until his financial condition made it a necessity. His father and two brothers were similarly affected by the diet and avoided it. So far as the patient could recall they presented no symptoms of pellagra. Bondurant describes nine cases in his practice, occurring from August 1, 1907, to May 1, 1909. Being a neurologist, of course the nervous symptoms are well developed in the cases which came to him. A neurotic

heredity was not a factor in his cases. He believes the nervous symptoms are those of a toxemic delirium, with eventual progressive degeneration of the cortical cells. In all of the cases there was a history of the liberal use of corn meal for food. Bondurant does not think that in the eleven years of his practice in Mobile he had seen a case of pellagra prior to August 1, 1907, and believes that the disease is comparatively new in the South.

Wood, in his own experiences, shows that the disease has probably gone unrecognized by those who have had an opportunity to observe cases. In 1907, he reported a series of cases under the title "Symmetrical Gangrene of the Skin," which he failed to recognize as pellagra. Both he and Thayer call attention to the fact that, while in Italy the disease is confined to the poor, in this country there seems to be no class preferences. Wood is inclined to believe in the existence of a family tendency or predisposition of some kind. He believes he has isolated, from the blood of a pellagrin, the same organism as Tizzoni and others, a very motile bacillus, which he is inclined to think is the cause of the disease. Thayer gives a detailed report of two cases occurring in Maryland, the first reported in that State, one in a woman in well-to-do circumstances, the other in a driver who gave no history of partaking of any corn. In the first case marked benefit was obtained from administration of the thyroid gland; this benefit was only temporary and the symptoms soon reappeared when the thyroid was discontinued. Thayer suggests that hypothyroidism may produce an unusual susceptibility to this disease.

Lavinder compares pellagra and tuberculosis in their course and prognosis;—the earlier the diagnosis is made in their course, and treatment given, the better the prognosis. Most authors seem to believe that the disease can be entirely cured. Lombroso recommends a liberal diet, including meats; also cold baths and douches where they are well borne, and arsenic in the form of Fowler's solution, 5 to 30 drops, carefully watching for appearances of poisoning. Others have used the newer arsenic preparations,—atoxyl, soamin,—and speak highly of them. The American physicians have not as a rule had very encouraging results from these. Cole recites an interesting experience in which he employed the transfusion of blood as a therapeutic agent in a case of pellagra. The donor was a patient recovered from the disease, the recipient was a case in such extreme condition that an experienced observer of the disease had pronounced recovery impossible. She was a colored female, age 35, extreme asthenia, deglutition and phonation barely possible; symptoms of three weeks duration. Crile method of transfusion was used, time of flow, 20 minutes. In twenty-four hours the patient showed marked improvement, mentally and otherwise; one week later, with steady improvement, the patient was walking about, and in a short time was in entirely normal health.

"EXPRESSION OF THE LENS IN ITS CAPSULE."

A REVIEW OF SOME RECENT AMERICAN LITERATURE.

By JOHN GREEN, JR., M. D.

1. THE EXPRESSION OF CATARACT IN ITS CAPSULE (WITH REPORT OF FORTY OPERATIONS).—Wuerdemann (*Trans. Sec. on Ophthalmology, American Medical Association, 1909*).
2. EXPERIENCE IN THE EXPRESSION OF CATARACTS IN THE CAPSULE BY THE SMITH METHOD.—Greene (*Trans. Sec. on Ophthalmology, American Med. Assn., 1909*).

The operation of expression of the lens in its capsule—the so-called Smith Indian Operation—is a subject which is receiving earnest attention from American ophthalmologists at the present time. The enormous material controlled by Major Smith, who has extracted, by this method more than 17,000 cataracts, and who has adopted it as a routine practice, has afforded him an opportunity to develop a very perfect technique which has so many point of originality that it is proper to regard the Smith operation as an innovation and not simply as an adaptation of the earlier Pagenstecher operation.

It has ever been the dream of ophthalmologists to secure some means of performing a surgically complete extraction—*i. e.*, of the lens within its capsule—without subjecting the eye to risks greater than those incident to the performance of the classical operation. The capsule is unquestionably a prime factor in the development of a secondary membrane which, according to Randolph and others, is probably an attempt on the part of the capsular remnants to regenerate the lens. Nevertheless the older operation has retained its favor with the great majority of operators on account of its supposedly greater safety. Many arguments in favor of the classical operation have been on *a priori* grounds, critics freely admitting that they had had no experience with the newer procedure.

Two papers bearing on this subject were read at the June meeting of the Section on Ophthalmology of the American Medical Association, and appear in full with the extended discussion in the recently issued transactions.

Wuerdemann contends that Smith's method differs only in minor points from Pagenstecher's. (It may be stated that this assertion evoked a spirited rejoinder from Smith who declares that Pagenstecher himself, after seeing the Smith operation performed, admitted that it differed in many essential points from his own technique.) Wuerdemann does not believe the purely corneal section acceptable, for this is followed by slow healing, iridic prolapse, distorted pupil and excessive astigmatism. He makes a 2-5 sclero-corneal section with conjunctival flap, combined with a very small iridectomy. The upper lid is lifted by a Fisher lid holder. Following the iridectomy the bend of a large hook is pressed moderately slowly and continuously on the cornea at the lower edge of the lens, that tilted backward, the pressure gradually relaxing as the upper edge of the

lens enters the wound; the body of the lens is lifted up by the pressure of the hook which follows it in its delivery. A flat spoon may be used to assist the lens to glide out. If the lens becomes impacted between the lips of the wound forceps may be necessary to aid in its extraction. The delivery is completed by the end of the hook catching the lens and rotating it out of the wound. The operation is completed by stroking the iris and conjunctival flap into place. Wuerdemann concludes that the operation is not one to be attempted by any but the most skilled operator, and even with him is not to be chosen as a routine method, for it is a far more dangerous operation, except in the hands of an operator "whose touch is fine, who has no trembling fingers and whose judgment is the most exact."

Greene prefaces his paper with the statement that his first impression of the operation based on twenty cases operated by him was distinctly unfavorable, but further observation has shown that a fair proportion of the patients did well. He calls attention to the fact that no operation offers such a complete and satisfactory disposition of the capsule "which is the beginning, middle and end of most of our after-troubles," as extraction within the capsule. This is so evident that if any added risk is incurred in doing the operation it seems more than offset by what is gained in the comparative freedom from the complications which are liable to follow the regular operation. In Greene's opinion the percentage of success depends more on the attainment of a high degree of skill, technical knowledge and the imitative faculty than on any skill acquired in making the regular operation. Smith's assertion that *the* treatment of immature cataracts is extraction of the lens in its capsule is heartily endorsed by Greene. Hypermature cataracts, generally considered as suitable for extraction in the capsule, have, in this writer's experience, been the most difficult to express. Retinal detachment from loss of vitreous, so much feared by theoretical opponents of the method, appears to be infrequent. Greene himself has seen only two cases in which vision following the operation equalled perception of light which could be attributed to detachment of the retina after the loss of about one-half of the vitreous. "Loss of vitreous should not be the sole measure by which this operation is judged; if it is as serious as many think the danger is yet to be proved." Those favorable to the Smith operation point to the frequent necessity of a dissection and consequent danger from operative traumatism and infection in the classical operation and contend that the Smith operation is both safer and more complete even if the loss of vitreous is greater for the average operator which must be conceded. Greene is convinced that the Smith operation offers a smoother and less complicated healing than after any form of capsulotomy operation. What reactions have been encountered have been non-inflammatory in nature and have usually been associated with ruptures of the capsule, incarceration of the iris, cystoid healing, and blood pressure above 160 m.m. Hg. in nervous and restless patients.

The corneal incision advocated by Greene is an enlarged de Wecker without a corneal flap. To counteract the tendency to too large a pupil a small iridectomy is made. During the section and iridectomy the assistant raises the upper lid with the Noyes lid elevator. After the iridectomy the assistant changes to a large hook. To and fro pressure motions are made over the lower third of the lens with the tip of the strabismus hook. Then moderate pressure with the spatula edgewise across the lower sclero-corneal border will advance the lens toward the incision and the zonula will give way. Continued pressure from under or

behind the lens will cause it to describe a half circle, the wound will gape and the lens will emerge bottom end upward, leaving only a small band of zonula to be loosened. This must be done slowly and with the utmost gentleness by drawing it back and forth through the incision.

Emphasis is laid on the necessity of the patient looking straight forward during these manipulations to avoid loss of vitreous. Spasm of the orbicularis is effectually controlled by the strabismus hook and the downward traction on the lower lid by the thumb of the assistant. With a trained assistant it is practically impossible for a patient to squeeze out normal vitreous. If the vitreous should present, one end of the double ended spatula of Smith is passed in as far as the posterior pole of the lens which by pressure through the cornea is made to travel up this inclined plane to its exit. In reference to the pressure three points should be remembered. 1. The pressure should never be excessive but steady and equal. 2. The cornea should be kept moist. 3. There should be no pressure or rubbing over the centre of the cornea. The pressure exerted is not excessive, though it usually seems so to one observing the process for the first time. After the expulsion of the lens the edges of the coloboma are gently stroked into place though the danger of vitreous prolapse during this procedure is much greater than in the classical operation.

The after course is surprisingly free from complications, Greene having observed genuine iritis in only 3 of 75 cases. Striped keratitis and some irregularity in the anterior layers of the vitreous at first impair vision which reaches its best in from one to two months.

Expression within the capsule offers the following advantages:

1. A cataract can be removed at any stage.
2. No discission is ever necessary.
3. There is comparative freedom from post-operative inflammations.
4. There are no capsule entanglements, prompt healing is the rule.
5. The method is especially adapted to institutional work: one operation does all.
6. No ripening methods need be tried.
7. The result is better average vision which does not change with the time, if the fundus conditions remain favorable.

The disadvantages of the method are the following:

1. There is greater liability to loss of vitreous for the average operator.
2. From a cosmetic point of view the wide undrawn pupil (if it results) mars the appearance of the eye while it may not be a disadvantage to vision.
3. A skilled assistant is always necessary in performing the operation.

In the discussion Dr. Peter A. Callan stated that he had never done the operation except in cases of lenses dislocated into the vitreous. The operation appeared to involve a contest between how much pressure the operator had to apply and how much the hyaloid membrane would stand, and thought that such "traumatism" would invite infection. He believed the peasant class which largely made up the clientele of Major Smith, afforded more suitable subjects for this operation than the urban class with which we in America had to deal.

Dr. Arnold Knapp stated that the operation is more difficult and that the loss of vitreous is greater even when performed by skilful operators. Loss of vitreous may mean imperfect healing of the wound, entanglement of the iris, and subsequently a peculiar transformation of the anterior layers of the vitreous into slightly opaque tissue which interferes with vision. Reposition of the iris angles may induce vitreous prolapse which

is apt to come at the end of the operation. Peripheric iritic adhesions and moderate prolapse of the iris were rather the rule than the exception in the cases observed by him. On the other hand extraction in the capsule is an ideal and beautiful operation when the dislocation of the lens takes place readily. There is no post-operative irritation or inflammation of the iris and no further trouble with the capsule which in many cases makes the secondary operation more hazardous and difficult than the first.

Dr. Casey Wood based his estimate of the operation on the careful examination of 47 patients operated by Dr. Greene and the direct observation of the operation as performed by Greene on 9 patients. Wood is convinced that "given an experienced, intelligent, and skillful operator, working in conjunction with a tried and equally experienced assistant, and counting success in cataract extraction entirely from the standpoint of the amount, quality and persistence of central sight six months after the operation, the Major Smith procedure is the best method for extracting all forms of senile cataract."

Dr. Walter R. Parker had attempted extraction in the capsule 23 times, failing 3 times. One patient had post-operative mania and the eye was lost through panophthalmitis. In 50% of the cases the lens turned on itself. There was slight loss of vitreous in 21%. The amount of keratitis is greater than after the classical method.

Dr. W. H. Wilder has not thought it wise to deviate from the classical method. He had assisted Dr. Greene in operations at the Illinois Eye and Ear Infirmary. After several of the operations there were violent reactions and in many of the patients there appeared the lattice like keratitis which usually cleared up. One patient left the hospital with an opacity of the cornea which might have been due to an injury of Descemet's membrane. He criticised some of the statistics presented by Wuerdemann and expressed the hope that future statistics should be reliable in all details.

Dr. Percy Fridenberg related the after history of two patients operated by Major Smith in New York. During the operation, which took a great deal of time, the patients complained of intense pain. On the first dressing, two days later, there was extreme reaction with marked striated keratitis. One case developed a sluggish iridocyclitis, resulting in blindness. The other case showed severe striped keratitis and developed herpes of the cornea.

Dr. L. Webster Fox was non-committal but intended to follow the method.

Dr. Frank Allport believed that the operation was not for the average operator with the average amount of skill and the average number of extractions per annum. Major Smith and Dr. Greene, with their immense operative material, were doubtless justified in the work. The requirement that the patient should constantly look upward to avoid traction by the inferior rectus muscle seemed a great objection to the operation, because it was practically impossible to control the voluntary action of the eye.

Dr. M. Wiener was one of the early enthusiasts for the operation, but abandoned it two years ago. Three of his forty patients returned with membranes across the pupils. Dr. Wiener justly remarks that if a membrane is going to occur when the capsule has been removed he cannot see the great advantages of the operation.

Dr. M. D. Stevenson emphasized the importance of a large corneal incision. He prefers and performs a small sphincterotomy in place of the iridectomy. He regards inversion of the lens (complete rotation) as

very necessary for its safe delivery, inasmuch as the lens thus extruded, effectually blocks the wound and thus prevents loss of vitreous.

Dr. J. W. Millette spoke of the duties of the assistant. During the incision and iridectomy the upper lid is retracted by the Noyes elevator. The lower lid is slightly retracted with the face of the thumb or index finger. In this way the lids are under absolute control and the patient can do no harm by squeezing. After the section and iridectomy the patient must look directly toward the ceiling. The large hook then replaces the elevator and the orbicularis is under perfect control.

SILENT PERCUSSION.

A REVIEW OF RECENT LITERATURE.

By ALBERT E. TAUSSIG, M. D.

1. RESEARCHES IN PERCUSSION.—Goldscheider (*Deutsch. Arch. f. klin. Med.*, Vol. 94, Nos. 5 and 6).
2. SILENT PERCUSSION.—Herz (*Zentralbl. f. inn. Med.*, Vol. 30, No. 1).
3. THEORY OF THE PERCUSSION OF THE THORACIC ORGANS.—Moritz and Roehl (*Deutsch. Arch. f. klin. Med.*, Vol. 95, Nos. 5 and 6).
4. PERCUSSION.—Plesch (*Deutsch. Arch. f. klin. Med.*, Vol. 93, Nos. 1 and 2).
5. A NEW PHYSICAL SIGN.—Pottenger (*Medical Record*, Vol. 76, No. 17).

The time-honored methods of percussion, whereby comparatively loud notes are elicited, are unquestionably of great diagnostic value. The experience of many years has shown that from the cardiac, hepatic, splenic and other outlines, so obtained, definite and trustworthy diagnostic conclusions may be drawn. Recent work with the x-rays has shown, however, that the outlines of solid organs, especially of the heart, so obtained do not by any means correspond to the actual shape and size of the organs examined. The need, therefore, was felt for a method, sufficiently simple and easy for routine clinical use, whereby such viscera might be accurately outlined. Such a method was first suggested by Ewald, perfected by Goldscheider and now known as threshold percussion. In brief, the procedure is as follows: The plessimeter finger is bent stiffly at a right angle and applied to the chest so that its distal joints are held perpendicularly to the plane of the organ to be examined. Percussion is made not from the wrist but, with wrist and elbow kept flaccid, from the shoulder and so gently that with the ear held close to the finger a sound is just perceptible when percussing over a resonant organ. In outlining the heart, for instance, we percuss radially, along the intercostal spaces from lung to heart. As soon as the cardiac area is reached, the note, barely perceptible over the lungs, becomes inaudible. The change is very sharp and definite and the outlines so obtained correspond closely to those found by means of orthodiagraphy. We ourselves have found this method simple and very useful and use it nearly exclusively in routine work.

The objections to the method have been chiefly theoretic. It was maintained that such gentle percussion could set into vibration only superficial structures and that for outlining deep-seated organs, such as the right edge of the heart, a much stronger blow was required. The fallacy of this view was proven by Moritz in a very interesting series of experiments. He filled a tall lamp chimney with a fine gelatine froth, which in its physical characters closely resembles lung tissue, and imbedded in its lower portion a small rubber bulb. The latter was connected with a

lit gas jet. A one grain weight, dropped from an elevation of three-fourths of an inch upon the top of the cylinder of gelatine foam, caused a distinct twitching of the flame and the very lightest touch of the finger caused it to vibrate violently. Similar results were obtained with inflated lung tissue. Other experiments showed that whereas relatively strong percussion caused vibrations in the gelatine froth in all directions, laterally and diagonally as well as vertically, the gentlest possible percussion produced almost exclusively vertical vibrations. We may, therefore, conclude that in the thorax and to a certain extent in the abdomen the lightest possible percussion will cause vibrations that travel straight through to the back and that the gentler the blow, the more the vertical (sagittal) vibrations will predominate, until in orthopercussion we have the note affected only by those structures that lie directly beneath the plessimeter finger, in the direction of the percussion blow.

In working with orthopercussion, one soon becomes conscious, however, that the feeling of a different degree of resistance is almost as striking as the change in the percussion-note and from this observation has grown the method of palpatory percussion. Its theoretic basis is illustrated by Moritz's experiment, described above. Since the gentlest touch causes vibrations to travel through the lung clear to the back, and since, whenever we palpate over lung tissue containing solid structures, such as the heart, these waves are reflected back to the palpating finger, it is clear that for the detection of these differences only a sufficiently delicate sense of touch is requisite. The opinions of clinicians in regard to this method are very diverse. There can be no question that with sufficient practice it is possible accurately to outline deep seated solid viscera and that the results are quite as good as with auditory percussion. It is worth every physician's while to become adept in this method for it is often almost indispensable, as when the patient must be examined in noisy surroundings.

The failure of palpatory percussion to come into general use may be due to the fact that skill in it is somewhat difficult to acquire. Its name, too, is unfortunate. By palpation we usually mean recognition by means of cutaneous sensation. The beginner will, therefore, concentrate his attention upon the sensation perceived through his finger tips. In his book on diagnostic methods, Ebstein calls attention to the fact that in palpatory percussion not only the sense of touch, but that of pressure comes into play. Plesch, in our opinion correctly, goes still farther and maintains that not only the senses of touch and pressure, but also the muscle-sense, the tendon sensation, the periosteal sensation, in a word the entire deep sensation (*batyaesthesia*) of the percussing arm come into play. We know that these deep sensations are far more delicate than the sense of touch. Plesch, therefore, advises that, instead of tapping the chest gently, as Ebstein directs, the finger tips be made to rest gently upon the skin and the requisite vibration be produced by means of a slight vertical tremor. The third and fourth finger are placed gently upon the skin, parallel with the edge of the organ to be outlined. The fingers are moderately bent, the back of the hand in slight extension and the joints up to the shoulder kept so lax that the entire arm, as it were, rests upon the finger tips. Without moving the fingers, the wrist joint is raised and lowered rapidly and gentle thrusts produced in which the entire arm participates. The resulting direct and reflected waves produced in the body under examination will be felt in the entire arm and very delicate differences can be perceived. The finger tips are gradually moved towards the organ to be examined and outlines can be obtained that with

a little practice correspond closely with those found by means of orthodiagraphy.

Quite independently, Pottenger has worked out a similar method which he reported before the American Climatological Association in June of this year, and demonstrated before the Society of Internal Medicine of this city in September. He calls it "light touch palpation." It "consists of a feeling of resistance to the palpating finger when pressed gently upon the skin. To determine the presence of this sign it is well to begin at some little distance from the edge of the organ, or if it be an inflammation or infiltration that is to be outlined, it is well to begin over presumably normal tissue, and then by advancing towards the area whose limits are to be determined, there will be noted a feeling of resistance when this is reached. The heart can be easily and accurately outlined by it, the liver dulness, both relative and absolute, can be determined, and the areas of infiltration in the lung can be mapped out with surprising accuracy." At first he thought the sign to be a skin reflex, produced by a contraction of the *erectores pilorum*, but since he found it equally well marked on the cadaver, this explanation can not be the true one. The fact probably is, as indicated by the experiments of Moritz, that even the gentlest touch produces vibrations that can penetrate through the entire lung. These vibrations will evidently be different when passing through the lung without meeting an obstacle and when reflected back from some more solid structure such as the heart, liver, an area of consolidation or a pleuritic effusion. It seems marvelous that such delicate vibrations can be perceived by the palpating finger, but the fact is beyond dispute. As regards technique, it is essential that the touch be of the lightest and that the examination be made carefully and leisurely.

Under the title of "silent percussion," another method of some theoretic interest, though little practical importance, deserves mention. Proceeding on the assumption that in palpatory percussion the sound produced is a hindrance rather than a help, Max Herz has developed a rather curious method of his own. He argues that the sense of hearing can be eliminated in percussion in two ways, by very gentle percussion and by the simultaneous production of a very loud extraneous noise. He chose the latter means. Barany has constructed a small apparatus in which, by means of the vibration of a little disk a very loud noise is produced. When two rubber tubes are attached to the instrument and the end of one tube is inserted into each ear, a roar is heard that renders the observer practically deaf to all other sounds. If, so equipped, one percusses the chest for instance, only the tactile sensation is perceived. Herz was, by this means, able to outline the thoracic and other solid viscera very accurately. When rather strong percussion is used, figures are obtained that correspond about to those elicited by ordinary methods. On percussing very gently, however, the outlines of the organs examined coincide accurately with those obtained by means of the *x-ray*. The method, while interesting, would seem to possess no advantages over orthopercussion or light touch palpation.

BOOK REVIEWS.

THE PHYSICIAN'S POCKET ACCOUNT BOOK. By J. J. Taylor, M. D. Text pages, xxlv.; account pages, 216; leather. Price \$1.00 net, postpaid. Published by The Medical Council, 4105 Walnut St., Philadelphia, Pa.

The basis of this book is a form that is simple and plain for keeping accounts. A charge or a credit can be written in a few seconds of time, and yet it is so strong in law that it is accepted as *prima facie* proof of an account without additional testimony. It may be started any day in the year, may be continued until filled, and is never out of date. The main feature is the convenience of having this small book always in your pocket, so that you may enter a charge at once, on the spot, thus never forgetting any items; and also that you may be able to answer at once any inquiry, such as, "Doctor, how much do I owe you?" thus getting payment right there while the debtor has the money.

In the book also will be found excellent financial advice in regard to fees, billing, collecting, saving and investing, besides a brief form for a will, dying declarations, emergency infant baptism, treatment of poisoning, and much other useful data for instant reference. The popularity of Dr. Taylor's Pocket Account Book is rapidly growing among the busy men of the profession.

The same system is also made into a large book for desk or office use, for those who do not desire to carry their accounts with them.

REFRACTION AND HOW TO REFRACT. Including Sections on Optics, Retinoscopy, the Fitting of Spectacles and Eyeglasses, etc. By James Thorington, A. M., M. D., Professor of Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine, etc. Fourth Edition. 220 Illustrations, 13 of which are colored. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut St. 1909.

Extended notice of this wholly excellent and widely known little work on refraction is unnecessary. This (fourth) edition has been carefully revised and an appendix has been incorporated, which contains additional information on the subject of refraction, as also descriptions and illustrations of new instruments.

SOCIAL SERVICE AND THE ART OF HEALING. By Richard C. Cabot, M. D. New York: Moffat, Yard & Company. 1909. Price \$1.00 net.

Two attitudes are characteristic of two types of physician, especially in his charitable hospital or dispensary work. The one, the so-called "ultra-scientific" type, sees in the patient only the interesting case to be diagnosed with all care and to be treated with all the appropriate therapeutic agents at the disposal of the art of medicine, pure and simple. The other looks deeper. He sees in the patient a human being with individual frailties, perhaps even vices, and with surroundings, social and physical, peculiar to himself. He recognizes that any therapeutic regimen he may direct may suffer shipwreck on the rocks of the patient's weakness, ignorance or poverty. Realizing this he feels that his efforts at cure or relief are often vain, and a sense of ineffectiveness, or even of despair, overcomes him. It is then that he feels his limitations, for the art of medicine is only half of the art of healing. Permanent results are possible only through the coöperation of another group of workers. The physician may recognize the disease and give instructions in regard to its eradication, but the social worker, too, is needed to go to the root of the trouble, to give advice and instruction in regard to domestic hygiene, to offer counsel and assistance in enabling the sick bread-winner to get work of a sort that will not interfere with his recovery, occasionally directly to procure temporary financial help towards paying the rent or obtaining proper food. It is this "team-work" between the physician and the social worker that Dr. Richard C. Cabot advocates in a most interesting and instructive little book. Neither can work to the best advantage alone. The physician may give directions that the patient simply cannot carry out alone; the social worker may see indolence where there really

is illness, stupidity where there really is some remediable impairment of function. At the Massachusetts General Hospital this coöperation between doctor and social worker is being carried out with great success and mutual satisfaction. It is clear that future success in medical work among the poor lies along these lines.

THE PSYCHIC TREATMENT OF NERVOUS DISORDERS. Sixth Revised Edition. By Dr. Paul Dubois, Professor of Neuropathology at the University of Berne. Translated by Smith Ely Jelliffe, M. D., Ph.D., Visiting Neurologist, City Hospital; and William A. White, M. D., Superintendent Government Hospital for the Insane, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University. Octavo, cloth, 485 pp. Price \$3.00 net. Funk & Wagnalls Company, New York.

The widespread interest in this topic and the fact that the first edition of this work so quickly became completely exhausted, warrant the assertion that a new revised edition, including all the latest phases of the question, will be welcomed both by the profession and the public.

THE MEDICAL RECORD VISITING LIST. A Physician's Diary for 1910. New revised edition. New York: William Wood & Co.

This very convenient and eminently practical visiting list has appeared in a new edition. Adapted for 30 patients a week, with or without dates, in handsome morocco binding it costs \$1.25; for 60 patients a week, only \$1.50.

DISEASES OF THE HEART. By James Mackenzie, M. D., M. R. C. P. Oxford Medical Publications. London: Henry Frowde; Hodder & Stoughton. 1908.

Modern methods in the study of heart disease and in the interpretation of cardiac phenomena proceed along lines radically different from those, until recently, in vogue. Formerly great stress was laid upon the accurate recognition of the anatomic valvular lesion, and when we said "aortic stenosis," or "mitral insufficiency," we felt that we had made the diagnosis. More and more the inadequacy of this view is coming to be felt. Valvular and other anatomic lesions of the heart are ultimately of importance chiefly on account of their effect upon the myocardium and the diagnosis of the nature and the extent of the incompetence of the cardiac muscle is the one of greatest practical significance. New methods were found requisite to unlock the secrets of the cardiac muscle, and the most useful of these has been found to be a comparison of simultaneous tracings of the jugular vein and either the radial artery or the apex beat. The vein-tracing gives us an accurate notion of the action of the right auricle, the radial or the apex beat of the left ventricle. A comparison of the two makes possible a profound insight into the pathology of the cardiac rhythm and gives us many a useful bit of practical diagnostic and prognostic information. One of the pioneers in this work was James Mackenzie whose book on the Diseases of the Heart presents in concise form most of our knowledge on these matters. Space forbids any detailed consideration of so technical a subject; we shall merely give a single example of the scope of the graphic method in the study of heart disease. Every clinician has, at some time, had occasion to wonder at the capriciousness of digitalis, which now seems to act almost miraculously, now to be nearly impotent. In this matter Mackenzie himself has made a very interesting observation. He found that where the heart showed a "nodal rhythm," that is, where auricles and ventricles beat simultaneously instead of in succession, there especial benefit was derived from digitalis; in all other conditions, the activity of the drug was much less marked. Similarly his observations throw light upon slight and complete heart-block and a host of other matters that ordinary methods of physical examination leave obscure. The field is one of the most fascinating in internal medicine.

A SYSTEM OF OPERATIVE SURGERY. By various Authors. Edited by E. F. Burgard, M. S. (London), F. R. C. S. In Four Volumes. London: Henry Frowde. Oxford University Press. 1909.

Volume II. In the accuracy of description and the care of detail, few treatises compare with this volume. The selection of the operation depends so entirely on the pathologic condition that it is unavoidable in a large work of this sort to avoid a discussion of the disease; it is fortunate, therefore, that the authors selected are so well qualified for the subjects assigned them. The first part deals with operations for tuberculous affections of the joints, from the experience of Harold J. Stiles. It is an unusual but most timely classification and deals with each bone and joint of the body. Many methods are not those

we are most accustomed to, but throughout we note the constant reference to the practice of surgeons of many parts of the world.

Edmund Owen treats of hare lip and cleft palate operations.

Lenthal Cheatle, who has done so much excellent work on face cancer, has the chapter dealing with the disease in this locality. The surgery of the jaws is contributed by C. H. Fagge and completely covers this field, and operations on the tongue, tonsils and pharynx, by H. T. Bullin, whose name is so intimately associated with the best English work on pathology of tumors. Few chapters in the volume are equal to Bullin's in thoroughness of description and judicious selection of operation for the affection, either malignant or benign.

G. H. Moynihan, whose reputation for stomach surgery is international, covers surgery of this organ and makes a further note of the procedures that have been the most successful and expedient in his hands. G. H. Makins writes the part upon operations upon the intestines. It is thorough and satisfactory. Hernia operations fall to E. Barker, who is well known to those familiar with English surgery or its literature. One would believe by now that hernia and its treatment was a closed book, but it is well described and looked at in new ways by the author. The final chapter, by F. Swinford Edwards, is upon the rectum and anus, and we are glad to note that it deals with this branch of surgery as though it does not require a wonderfully specialized dexterity, but can be encompassed by following good surgical principles.

Volume IV, is in part taken up by discussion of gynecologic operation. The abdominal part of this work is from the pen of J. Bland-Sutton, well known for his surgery. His descriptions of technique are excellent, but we miss the illustrations that in America accompany the best treatises on this subject. However, the general principles of the care of the patient, the risks, the after-treatment, and particularly the judicious selection of the type of operation, make this part of the work invaluable. Vaginal gynecology is well handled by John Philips; ophthalmic operations are by M. S. Magon; operations upon the ear, by Hunter F. Tod; operations on the larynx and trachea, by W. Douglas Hunter; operations on the nose, by St. Clair Thomson.

The indexing of this volume is so arranged that there is no confusion of the subject. In the second volume the illustrations are notably good. The fourth volume is not quite so well fitted with these aids.

KLINISCHE UND EXPERIMENTALLE STUDIEN ZUR PATHOLOGIE U. THERAPIE D. TUBERKULOSE IM KINDESALTER (Clinical and Experimental Studies on Pathology and Therapy of Tuberculosis in Childhood). Bauer and Engel. Würzburg: Stuber's Verlag, 1909, p. 165. M.: 6.50.

This monograph presents a series of studies with relation to tuberculosis in childhood. The main interest attaches to the very complete and exhaustive article of Dr. Engel's with reference to tuberculin therapy in childhood. Nineteen children were treated at the Dusseldorf children's clinic and all details are given in full. Old tuberculin (Koch) was used.

Engel finds that a single reaction allows no deduction as to the character of the infection. For this, repeated injections are necessary. In general terms it may be said that the tolerance for tuberculin is in inverse ratio to the degree of infection. The degree of reaction is dependent upon the presence (and the extent) of pulmonary involvement. It is further established that the degree of reaction is dependent *not* upon the age of the child, but upon the extent and progression of the infection. In so far as the typical tuberculosis of childhood is lymphatic or of the bones or joints and not pulmonary, the tuberculin treatment of children and adults differs widely because the cases without pulmonary involvement do best upon tuberculin treatment.

The diagnostic value of the tuberculin injection is fully substantiated. For any one interested in the minutiae of the subject, the monograph will be of great value. A full bibliography is appended, as are also illustrative charts and plates.

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